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ABSTRACT

Since its inception, the National Assessment of Educational Progress (NAEP) has been conducting assessments of the nation's students attending public and private schools. This report presents NAEP 1992 trend data in science, mathematics, reading, and writing. Proficiency scales provide a basis for comparing student overall achievement in each of the four curriculum areas. Comparisons are provided for samples of students in grades 4, 8, and 11 for writing, and for students aged 9, 13, and 17 in the other curricular areas. About 31,000 students were involved in NAEP's 1992 trend assessments. In general, overall trends in science and mathematics show noteworthy improvements during the past decade since the 1983 publication of "A Nation At Risk," while trends for reading show declines for the same period. Between 1984 and 1992, writing performance of eleventh graders showed little change. Writing has remained relatively stable for grade 4, but there was a significant decline for grade 8 from 1984 to 1990. An upward turn since then deserves further study. Twenty-six figures and 96 tables present survey findings. Twelve tables in a procedural appendix supplement the text. A Data Appendix summarizes data for each area. (SLD)

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NAEP 1992 Trends in Academic Progress

Achievement of U.S. Students in
Science, 1969 to 1992 • Mathematics, 1973 to 1992
Reading, 1971 to 1992 • Writing, 1984 to 1992

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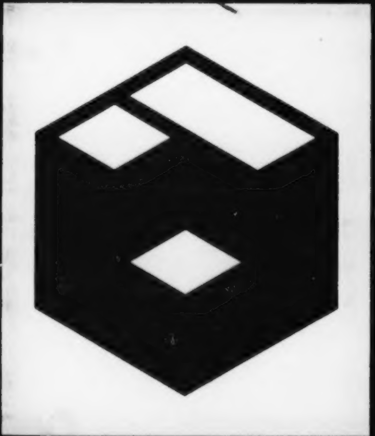

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THE NATION'S REPORT CARD, the National Assessment of Educational Progress (NAEP), is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted periodically in reading, mathematics, science, writing, history/geography, and other fields. By making objective information on student performance available to policymakers at the national, state, and local levels, NAEP is an integral part of our nation's evaluation of the condition and progress of education. Only information related to academic achievement is collected under this program. NAEP guarantees the privacy of individual students and their families.

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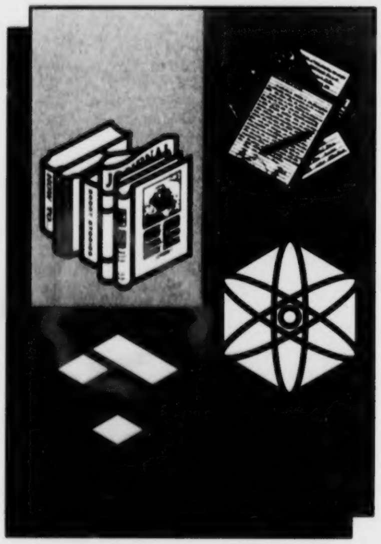

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Executive Summary

Introduction

During the recent period of heightened awareness about the need for educational improvement, broad-based educational reforms have been recommended ranging from reorganizing schools to making extensive instructional changes within particular curricular areas. As part of the increased effort to stimulate academic improvement, in 1989 the President and governors adopted a set of six ambitious national education goals for the 21st century. These goals focused on ensuring that children start school ready to learn, raising high school graduation rates, increasing levels of educational achievement, promoting science and mathematics achievement as well as literacy and lifelong learning, and freeing schools of drugs and violence. In the Spring of 1994, Congress expanded the goals to also cover teacher preparation and parental involvement.

Since its inception in 1969, the National Assessment of Educational Progress (NAEP) has been regularly conducting assessments of the nation's students attending public and private schools. As such, it provides a barometer for gauging progress toward improved educational attainment for our nation's youth. In addition, NAEP's collection of information about a

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wide variety of background variables enables it to place current school practices in the context of recommended reforms. Through a series of *Report Cards* about student achievement in various curricular areas[1], focused reports about special issues such as problem solving or effective instruction in mathematics, and technical documentation, NAEP provides a wealth of important information about student achievement and the contexts for schooling.

One of NAEP's special features is the ability to monitor trends in academic achievement in core curriculum areas since the early 1970s. By readministering materials and replicating procedures from assessment to assessment, NAEP provides valuable information about progress in academic achievement, and about whether the United States can meet the challenge of accomplishing its national education goals of improving achievement and becoming number one in the world in mathematics and science by the year 2000.

This report presents NAEP's 1992 trend data in science, mathematics, reading, and writing. NAEP has used proficiency scales that range from 0 to 500 to summarize students' performance across a variety of multiple-choice and constructed-response questions and provide a basis for describing students' overall achievement in each of the four curriculum areas. Comparisons in average proficiency are provided across assessments and among subpopulations for representative samples of students in grades 4, 8, and 11 for writing and students aged 9, 13, and 17 for the other three curriculum areas. Approximately 31,000 students were involved in NAEP's 1992 trend assessments. To "anchor" or give meaning to the results, students' performance is characterized at five levels along the proficiency scales (150, 200, 250, 300, and 350), and the percentages of students reaching each level are presented. For reading and writing, results also are presented for individual tasks.

Overall Trends

The overall trends in science, mathematics, reading, and writing are presented in Figure 1. In general, the trends in science and mathematics show noteworthy improvements during the past decade since the 1983 publication of *A Nation at Risk*, while the trends for reading show declines during the same period.

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[1] Mullis, I.V.S., Dossey, J.A., Owen, E.H., & Phillips, G.W., *NAEP 1992 Mathematics Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Mullis, I.V.S., Campbell, J.R., & Farstrup, A.E., *NAEP 1992 Reading Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Applebee, A.N., Langer, J.A., Mullis, I.V.S., Latham, A.S., & Gentile, C.A., *NAEP 1992 Writing Report Card* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1994).

At all three ages, science performance declined significantly in the 1970s, but improved significantly during the 1980s. Compared to 1969-70, average achievement in 1992 was higher at age 9, essentially the same at age 13, and lower at age 17. Average mathematics proficiency improved between 1973 and 1992 at ages 9 and 13. The data at age 17 parallel the science trends, with declines in performance between 1973 and 1982 followed by recovery. In mathematics, at age 17, however, performance in 1992 had returned to the initial 1973 level.

Reading performance at age 9 improved significantly between 1971 and 1980, and then declined significantly between 1980 and 1992, returning essentially to the original level. At age 13, little change occurred from assessment to assessment, but average performance was higher in 1992 than 1971. Seventeen-year-olds made significant gains between 1971 and 1984, although virtually no change has been observed since then. Still, average reading achievement at age 17 was higher in 1992 than in 1971.

Between 1984 and 1992, the writing performance of eleventh graders showed little change. Also, writing performance has remained relatively stable at grade 4, despite a significant decrease in 1990 followed by a recovery in 1992. At grade 8, there was a significant decline between 1984 and 1990, followed by a significant improvement between 1990 and 1992. This unusually large gain for a two-year period initiated considerable scrutiny of operational and analytic procedures, yet no evidence was found that cast doubt on the results. Although much more subtle, the pattern at grade 4 was similar and the gains at grade 8 were pervasive across several measures of writing achievement. Still, such a large gain may be considered quite surprising, and the prudent approach is to wait and see if subsequent assessments through the 1990s confirm this improvement.

For science and mathematics:

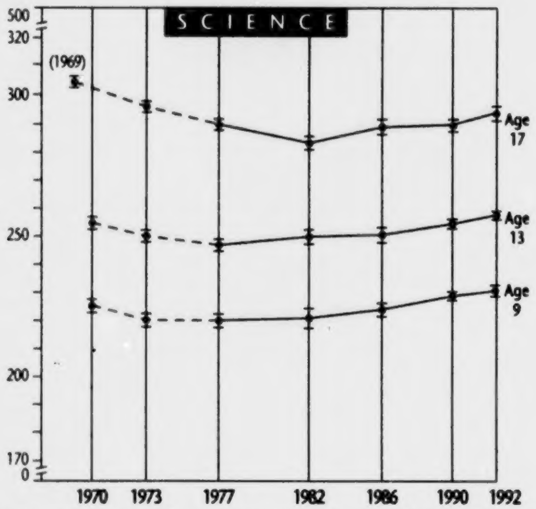
- In the long term, with the exception of science performance at age 17, average achievement in 1992 was at least as high as in the early 1970s, if not higher.
- The declines in science achievement as well as in mathematics at age 17 during the 1970s were followed by a period of recovery from 1982 to 1992.
- For both science and mathematics, students at all three ages made gains in average proficiency between 1982 and 1992.

For reading and writing:

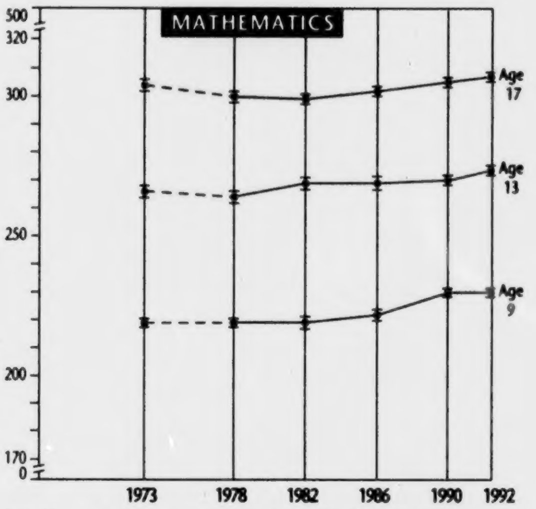
- Similar to the trends in science and mathematics, average reading achievement is at least as high, if not higher, than in 1971.
- During the 1980s there was a significant decline in reading achievement at age 9. With the exception of the improvement in writing at grade 8, there have been no significant improvements in reading or writing performance since 1984.

FIGURE 1

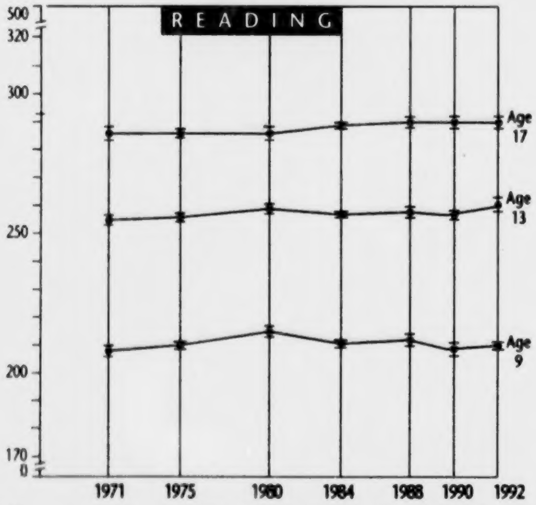
National Trends in Average Achievement in Science, Mathematics, Reading, and Writing



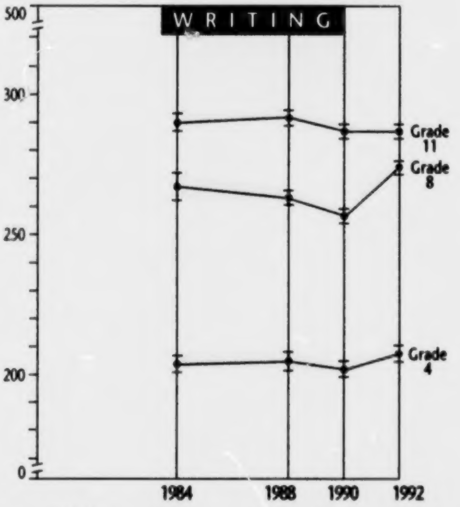
	1970	1973	1977	1982	1986	1990	1992
Age 17	305(1.0)*	296(1.0)†	290(1.0)*†	283(1.2)*†	288(1.4)*†	290(1.1)†	294(1.3)†
Age 13	255(1.1)	250(1.1)*†	247(1.1)*†	250(1.3)*†	251(1.4)*	255(0.9)	258(0.8)
Age 9	225(1.2)*	220(1.2)*†	220(1.2)*†	221(1.8)*	224(1.2)*	229(0.8)	231(1.0)†



	1973	1978	1982	1986	1990	1992
Age 17	304(1.1)	300(1.0)*	298(0.9)*†	302(0.9)*	305(0.9)	307(0.9)
Age 13	266(1.1)*	264(1.1)*	269(1.1)*	269(1.2)*	270(0.9)†	273(0.9)†
Age 9	219(0.8)*	219(0.8)*	219(1.1)*	222(1.0)*	230(0.8)†	230(0.8)†



	1971	1975	1980	1984	1988	1990	1992
Age 17	285(1.2)*	286(0.8)*	286(1.2)*	289(0.6)†	290(1.0)†	290(1.1)†	290(1.1)†
Age 13	255(0.9)*	256(0.8)*	258(0.9)	257(0.5)	258(1.0)	257(0.8)	260(1.2)†
Age 9	208(1.0)	210(0.7)	215(1.0)*†	211(0.7)†	212(1.1)†	209(1.2)	210(0.9)



	1984	1988	1990	1992
Grade 11	290(1.6)	291(1.3)	287(1.0)	287(1.4)
Grade 8	267(2.0)*	264(1.3)*	257(1.2)*†	274(1.3)†
Grade 4	204(1.5)	206(1.6)	202(1.5)*	207(1.5)

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1969-70 for science, 1973 for mathematics, 1971 for reading, and 1984 for writing, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science, Mathematics, Reading, and Writing Trend Assessments.

Trends in Levels of Proficiency

Information about student performance at various levels on the NAEP proficiency scales and trends in that performance across the assessments is available back to 1977 in science, 1978 in mathematics, 1971 in reading, and 1984 in writing. Essentially, the trends in levels of performance reflect the overall trends.

- Greater percentages of 9-year-olds demonstrated understanding of the fundamentals in science and mathematics (Levels 150, 200, and 250), but the percentages reaching various points on the reading scale were virtually identical in 1971 and 1992. Also, the percentages of fourth graders reaching various points on the writing scale were essentially the same between 1984 and 1992.
- At age 13, virtually all students reached Level 150 in science and mathematics, and gains were observed at Levels 200 and 250. In reading and writing, no significant changes were observed at the lower scale levels, but higher percentages reached Level 300.
- At age 17, gains generally were noted in all curriculum areas at Levels 250 and 300 with the exception of writing. Despite these signs of progress, however, in 1992, 10 percent or fewer of the high school students reached Level 350 in any of the four curriculum areas and the percentages have not changed significantly between the baseline assessments and 1992.

Science. Compared to 1977, increased percentages of 9- and 13-year-olds performed at or above Levels 150, 200, and 250, indicating an improved grasp of general scientific information (see Table 1). Also, in 1992, greater percentages of 17-year-olds reached Level 300, demonstrating some detailed knowledge and analytic understanding of scientific procedures. The percentage of 13-year-olds attaining Level 300, however, remained essentially unchanged (12 percent), as did the percentage of 17-year-olds attaining Level 350 (10 percent).

Table 1

Trends in Percentages of Students Performing At or Above Science Proficiency Levels, Ages 9, 13, and 17, 1977 to 1992

Level	AGE 9		AGE 13		AGE 17	
	Percent in 1992	**Percent in 1977**	**Percent in 1992**	**Percent in 1977**	**Percent in 1992**	**Percent in 1977**
350 Can infer relationship and draw conclusions using detailed scientific knowledge	0(0.1)	0(0.0)	0(0.1)	1(0.1)*	10(0.7)	8(0.4)
300 Has some detailed scientific knowledge and can evaluate the appropriateness of scientific procedures	3(0.3)	3(0.3)	12(0.8)	11(0.5)	47(1.5)	42(0.9)*
250 Understands and applies general information from the life and physical sciences	33(1.0)	26(0.7)*	61(1.1)	49(1.1)*	83(1.2)	82(0.7)
200 Understands some simple principles and has some knowledge, for example, about plants and animals	78(1.2)	68(1.1)*	93(0.5)	86(0.7)*	98(0.5)	97(0.2)
150 Knows everyday science facts	97(0.3)	94(0.6)*	100(0.1)	98(0.2)*	100(0.0)	100(0.0)

[*] Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment.

Mathematics. As shown in Table 2, the trends across proficiency levels for mathematics show a picture similar to that for science. Improvements were observed between 1978 and 1992 for the three lower scale levels at age 9, for Levels 200 and 250 at age 13, and for Levels 250 and 300 at age 17. The percentage of 13-year-olds attaining Level 300, however, remained virtually the same (19 percent) between 1978 and 1992, as did the percentage of 17-year-olds attaining Level 350 (7 percent).

Table 2

Trends in Percentages of Students Performing At or Above Mathematics Proficiency Levels, Ages 9, 13, and 17, 1978 to 1992

	AGE 9		AGE 13		AGE 17	
Level	Percent in 1992	Percent in 1978	Percent in 1992	Percent in 1978	Percent in 1992	Percent in 1978
350 Can solve multi-step problems and use beginning algebra	0(0.0)	0(0.0)	0(0.2)	1(0.2)	7(0.6)	7(0.4)
300 Can compute with decimals, fractions, and percents; recognize geometric figures; solve simple equations; and use moderately complex reasoning	1(0.3)	1(0.1)	19(1.0)	18(0.7)	59(1.3)	52(1.1)*
250 Can add, subtract, multiply, and divide using whole numbers, and solve one-step problems	28(0.9)	20(0.7)*	78(1.1)	65(1.2)*	97(0.5)	92(0.5)*
200 Can add and subtract two-digit numbers and recognize relationships among coins	81(0.8)	70(0.9)*	99(0.3)	95(0.5)*	100(0.0)	100(0.1)
150 Knows some addition and subtraction facts	99(0.2)	97(0.3)*	100(0.0)	100(0.1)	100(0.0)	100(0.0)

*Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment.

Reading. The trends in reading across proficiency levels show little difference between 1971 and 1992, especially at age 9. As presented in Table 3, modest improvement was observed at age 13 for Level 300, and at age 17 for Levels 250 and 300.

Table 3

Trends in Percentages of Students Performing At or Above Reading Proficiency Levels, Ages 9, 13, and 17, 1971 to 1992

		AGE 9		AGE 13		AGE 17	
Level		**Percent in 1992**	**Percent in 1971**	**Percent in 1992**	**Percent in 1971**	**Percent in 1992**	**Percent in 1971**
350	Can synthesize and learn from specialized reading materials	0(0.0)	0(0.0)	1(0.3)	0(0.0)	7(0.6)	7(0.4)
300	Can find, understand, summarize, and explain relatively complicated information	1(0.2)	1(0.1)	15(0.9)	10(0.5)*	43(1.1)	39(1.0)*
250	Can search for specific information, interrelate ideas, and make generalizations	16(0.8)	16(0.6)	62(1.4)	58(1.1)	82(0.8)	79(0.9)*
200	Can comprehend specific or sequentially related information	62(1.1)	59(1.0)	93(0.7)	93(0.5)	97(0.4)	96(0.3)
150	Can carry out simple, discrete reading tasks	92(0.4)	91(0.5)	100(0.3)	100(0.0)	100(0.1)	100(0.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment.

Writing. For fourth, eighth, and eleventh graders, few changes were observed in writing achievement between 1984 and 1992. As shown in Table 4, increased percentages of eighth graders reached Levels 300 and 350, while performance at grades 4 and 12 was similar across assessments.

Table 4

Trends in Percentages of Students Performing At or Above Writing Proficiency Levels, Grades 4, 8, and 11, 1984 to 1992

	GRADE 4		GRADE 8		GRADE 11	
Level	Percent in 1992	Percent in 1984	Percent in 1992	Percent in 1984	Percent in 1992	Percent in 1984
350 Can write effective responses containing supportive details and discussion	0(0.0)	0(0.0)	2(0.3)	0(0.1)*	2(0.4)	2(0.7)
300 Can write complete responses containing sufficient information	0(0.2)	0(0.4)	25(1.5)	13(1.8)*	36(1.9)	39(2.4)
250 Can begin to write focused and clear responses to tasks	13(1.1)	10(1.0)	75(1.4)	72(2.6)	87(1.3)	89(1.0)
200 Can write partial or vague responses to tasks	58(1.9)	54(2.0)	98(0.4)	98(0.9)	100(0.2)	100(0.3)
150 Can respond to tasks in abbreviated, disjointed, or unclear ways	93(0.5)	93(1.3)	100(0.1)	100(0.0)	100(0.0)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment.

Trends in Performance by Race/Ethnicity

Changes in average achievement across the NAEP trend assessments in science, mathematics, reading, and writing are presented by race/ethnicity and gender in Table 5.

Table 5

Trends Since the 1970s in Average Proficiency in Science, Mathematics, and Reading by Race/Ethnicity and Gender

	AGE 9		AGE 13		AGE 17	
SCIENCE	**Proficiency In 1992**	**Proficiency In 1970[†]**	**Proficiency In 1992**	**Proficiency In 1970[†]**	**Proficiency In 1990**	**Proficiency In 1969[†]**
Nation	231(1.0)	225(1.2)*	258(0.8)	255(1.1)	294(1.3)	305(1.0)*
White	239(1.0)	236(0.9)	267(1.0)	263(0.8)*	304(1.3)	312(0.8)*
Black	200(2.7)	179(1.9)*	224(2.7)	215(2.4)	256(3.2)	258(1.5)
Hispanic	205(2.8)	192(2.7)*	238(2.6)	213(1.9)*	270(5.6)	262(2.2)
Male	235(1.2)	228(1.3)*	260(1.2)	257(1.3)	299(1.7)	314(1.2)*
Female	227(1.0)	223(1.2)	256(1.0)	253(1.2)	289(1.5)	297(1.1)*
MATHEMATICS	**Proficiency In 1992**	**Proficiency In 1973**	**Proficiency In 1992**	**Proficiency In 1973**	**Proficiency In 1992**	**Proficiency In 1973**
Nation	230(0.8)	219(0.8)*	273(0.9)	266(1.1)*	307(0.9)	304(1.1)
White	235(0.8)	225(1.0)*	279(0.9)	274(0.9)*	312(0.8)	310(1.1)
Black	208(2.0)	190(1.8)*	250(1.9)	228(1.9)*	286(2.2)	270(1.3)*
Hispanic	212(2.3)	202(2.4)*	259(1.8)	239(2.2)*	292(2.6)	277(2.2)*
Male	231(1.0)	218(0.7)*	274(1.1)	265(1.3)*	309(1.1)	309(1.2)
Female	228(1.0)	220(1.1)*	272(1.0)	267(1.1)*	304(1.1)	301(1.1)
READING	**Proficiency In 1992**	**Proficiency In 1971[†]**	**Proficiency In 1992**	**Proficiency In 1971[†]**	**Proficiency In 1992**	**Proficiency In 1971[†]**
Nation	210(0.9)	208(1.0)	260(1.2)	255(0.9)*	290(1.1)	285(1.2)*
White	218(1.0)	214(0.9)*	266(1.2)	261(0.7)*	297(1.4)	291(1.0)*
Black	184(2.2)	170(1.7)*	238(2.3)	222(1.2)*	261(2.1)	239(1.7)*
Hispanic	192(3.1)	183(2.2)	239(3.5)	232(3.0)	271(3.7)	252(3.5)*
Male	206(1.3)	201(1.1)*	254(1.7)	250(1.0)	284(1.6)	279(1.2)*
Female	215(0.9)	214(1.0)	265(1.2)	261(0.9)*	296(1.1)	291(1.3)

[†] NOTE: For Hispanic students, the science differences are calculated between 1977 and 1992, and the reading differences are calculated between 1975 and 1992.

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

Since the initial trend assessments in the early 1970s, the overall gains in science, mathematics, and reading achievement have been reflected in increased performance by White, Black, and Hispanic students. However, the results differ somewhat by curriculum area.

- In science, White students had increased average achievement at ages 13 and 17, Black students at age 9, and Hispanic students at ages 9 and 13.
- In mathematics, all three racial/ethnic groups showed improvement at all three ages, with the exception of White 17-year-olds.
- In reading, White and Black students had increased average proficiency at all three ages, as did Hispanic 17-year-olds.

Trends in performance by racial/ethnic subgroups, however, parallel the national trends of more improvement recently in science and mathematics than in reading and writing. Table 6 presents the trends in average performance by race/ethnicity and gender between 1982 and 1992 for science and mathematics, and between 1984 and 1992 for reading and writing.

Table 6
Trends Since the 1980s in Average Proficiency in Science, Mathematics, Reading, and Writing by Race/Ethnicity, and Gender

	AGE 9		AGE 13		AGE 17	
SCIENCE	**Proficiency in 1992**	**Proficiency in 1982**	**Proficiency in 1992**	**Proficiency in 1982**	**Proficiency in 1992**	**Proficiency in 1982**
Nation	231(1.0)	221(1.8)*	258(0.8)	250(1.3)*	294(1.3)	283(1.2)*
White	239(1.0)	229(1.9)*	267(1.0)	257(1.1)*	304(1.3)	293(1.0)*
Black	200(2.7)	187(3.0)*	224(2.7)	217(1.3)	256(3.2)	235(1.7)*
Hispanic	205(2.8)	189(4.2)*	238(2.6)	226(3.9)*	270(5.6)	249(2.3)*
Male	235(1.2)	221(2.3)*	260(1.2)	256(1.5)	299(1.7)	292(1.4)*
Female	227(1.0)	221(2.0)*	256(1.0)	245(1.3)*	289(1.5)	275(1.3)*
MATHEMATICS	**Proficiency in 1992**	**Proficiency in 1982**	**Proficiency in 1992**	**Proficiency in 1982**	**Proficiency in 1992**	**Proficiency in 1982**
Nation	230(0.8)	219(1.1)*	273(0.9)	269(1.1)*	307(0.9)	298(0.9)*
White	235(0.8)	224(1.1)*	279(0.9)	274(1.0)*	312(0.8)	304(0.9)*
Black	208(2.0)	195(1.6)*	250(1.9)	240(1.6)*	286(2.2)	272(1.2)*
Hispanic	212(2.3)	204(1.3)*	259(1.8)	252(1.7)*	292(2.6)	277(1.8)*
Male	231(1.0)	217(1.2)*	274(1.1)	269(1.4)*	309(1.1)	302(1.0)*
Female	228(1.0)	221(1.2)*	272(1.0)	268(1.1)*	304(1.1)	296(1.0)*
READING	**Proficiency in 1992**	**Proficiency in 1984**	**Proficiency in 1992**	**Proficiency in 1984**	**Proficiency in 1992**	**Proficiency in 1984**
Nation	210(0.9)	211(0.7)	260(1.2)	257(0.5)	290(1.1)	289(0.6)
White	218(1.0)	218(0.8)	266(1.2)	263(0.6)*	297(1.4)	295(0.7)
Black	184(2.2)	186(1.1)	238(2.3)	236(1.0)	261(2.1)	264(1.0)
Hispanic	192(3.1)	187(2.1)	239(3.5)	240(1.7)	271(3.7)	268(2.2)
Male	206(1.3)	208(0.8)	254(1.7)	253(0.6)	284(1.6)	284(0.6)
Female	215(0.9)	214(0.8)	265(1.2)	262(0.6)	296(1.1)	294(0.8)
	Grade 4		**Grade 8**		**Grade 11**	
WRITING	**Proficiency in 1992**	**Proficiency in 1984**	**Proficiency in 1992**	**Proficiency in 1984**	**Proficiency in 1992**	**Proficiency in 1984**
Nation	207(1.5)	204(1.5)	274(1.3)	267(2.0)*	287(1.4)	290(1.6)
White	217(1.7)	211(1.9)	279(1.3)	272(2.1)*	294(1.2)	297(1.8)
Black	175(3.8)	182(5.0)	258(4.0)	247(5.7)	263(3.2)	270(3.6)
Hispanic	189(3.6)	188(5.8)	265(2.2)	247(6.4)*	274(3.8)	259(6.6)
Male	198(1.7)	200(2.8)	264(1.9)	258(2.3)	279(1.2)	281(1.4)
Female	216(1.7)	208(3.1)*	285(1.3)	276(2.4)*	296(2.0)	299(2.5)

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

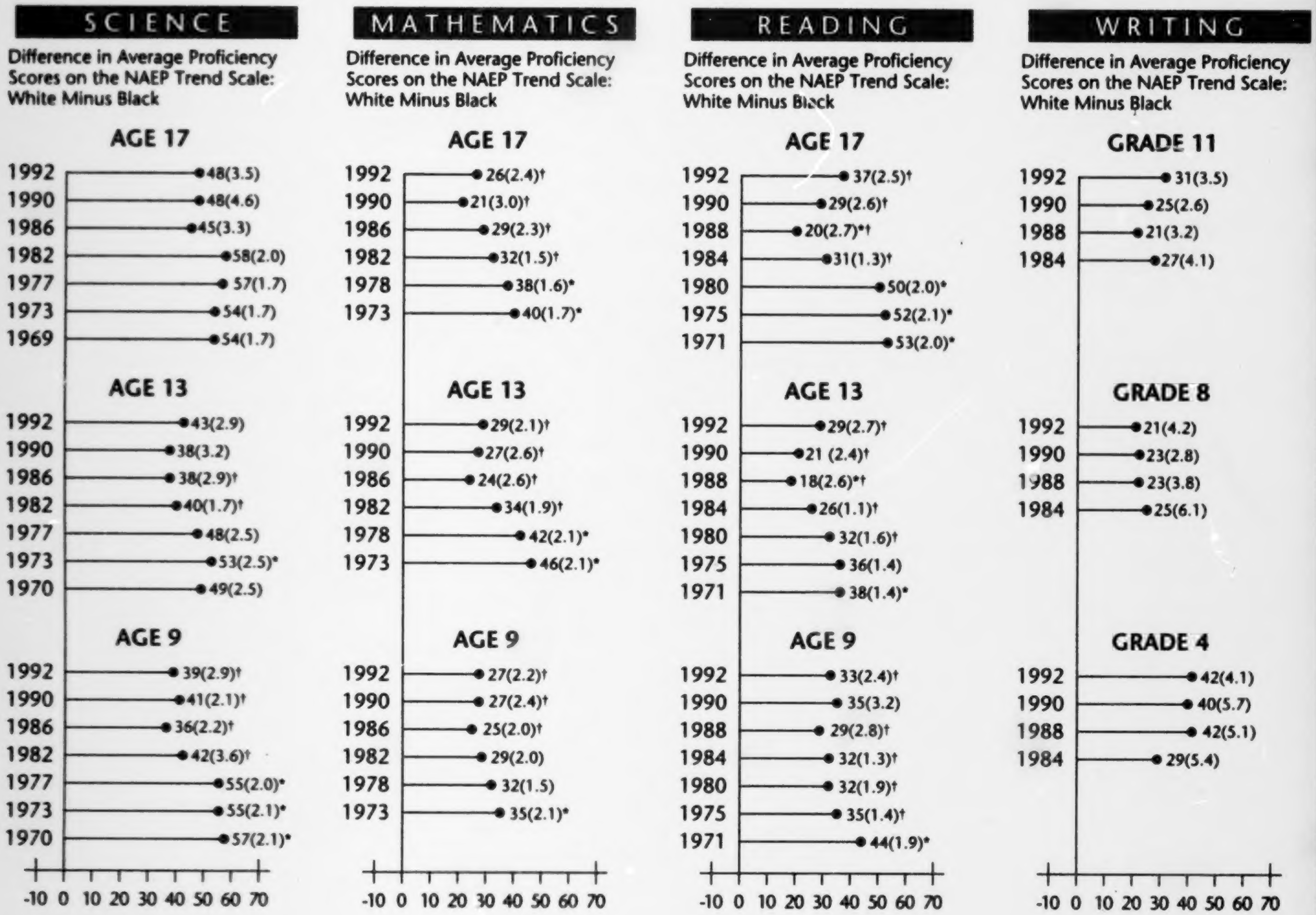
In the past decade, all three racial/ethnic subgroups showed improvements in both science and mathematics at all three ages, with the exception of Black 13-year-olds in science.

In contrast, there have been few recent improvements in reading and writing achievement. Between 1984 and 1992, there were no significant increases in average reading proficiency for White, Black, and Hispanic students at any of the three ages, except for White 13-year-olds. The only increases in average writing achievement were observed for White and Hispanic students at grade 8. Black students have not demonstrated improved achievement in these important literacy skills since 1984, and at age 17 have shown declines in average reading performance since 1988.

A stated objective of the national education goal emphasizing increases in students' academic achievement and citizenship is that the performance distribution for minority students will more closely reflect the student population as a whole. As shown in Figure 2, the differences in average proficiency between White and Black students have narrowed at all three ages in mathematics and reading, and at age 9 in science. Differences in average proficiency between White and Hispanic students also have narrowed at age 13 in science and mathematics, and at age 17 in mathematics and reading (see Figure 3).

FIGURE 2

Trends in Differences in Average Proficiency of White and Black Students Across Subject Areas



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* Statistically significant difference from 1992 at about the 95 percent confidence level.

† Statistically significant difference from the initial assessment year in each subject. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment

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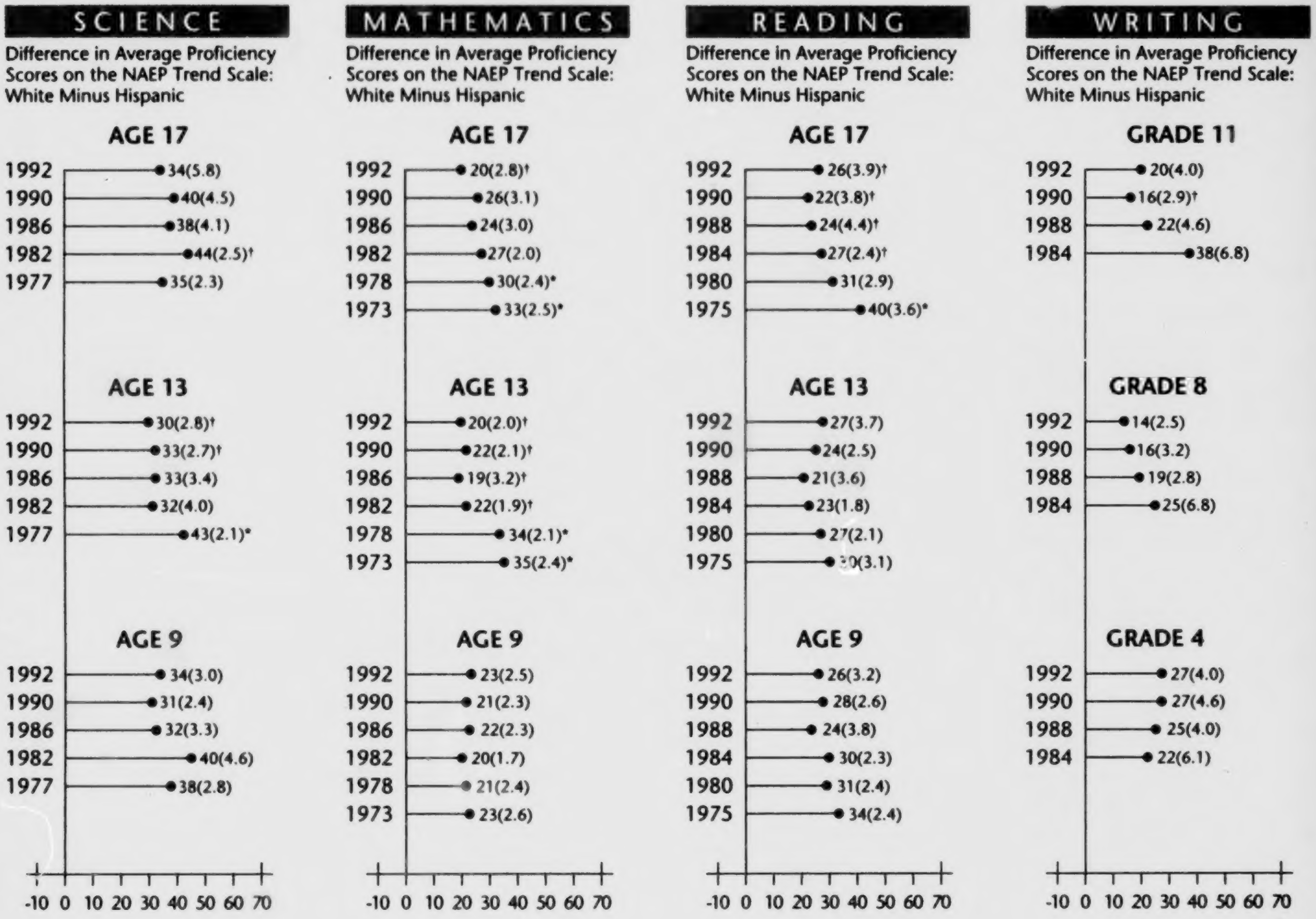
Despite progress in reducing the performance differences across the past two decades, however, the gaps remain large. In 1992, both Black and Hispanic students, on average, demonstrated significantly lower proficiency than White students. This overall difference occurred notwithstanding the fact that students from all three racial/ethnic groups demonstrated performance across a range from high to low achievement.

Further, the trends in performance differences among the three racial/ethnic groups since 1986 in science and mathematics and since 1988 in reading and writing indicate that progress in closing the gaps has stalled. In fact, at ages 13 and 17, the achievement gaps between White and Black students have increased since 1988. During the same time period, performance differences between White and Hispanic students also remained quite constant.

FIGURE 3

Trends in Differences in Average Proficiency of White and Hispanic Students Across Subject Areas



[*] Statistically significant difference from 1992 at about the 95 percent confidence level.

[†] Statistically significant difference from the initial assessment year in each subject. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment

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Trends in Performance by Gender

As shown in Table 5, the long-term gains in science, mathematics, and reading by gender have been somewhat inconsistent. Males showed improvement at ages 9 and 17 in science and reading, and at ages 9 and 13 in mathematics. Females showed improvement at age 17 in science, at ages 9 and 13 in mathematics, and at age 13 in reading.

The recent trends shown in Table 6 reveal that both genders had gains between 1982 and 1992 in average proficiency in science and mathematics at all three ages, with the exception of males at age 13. Since 1984, however, neither gender showed improvement in reading or writing achievement at any of the three ages, except for females at grades 4 and 8 in writing.

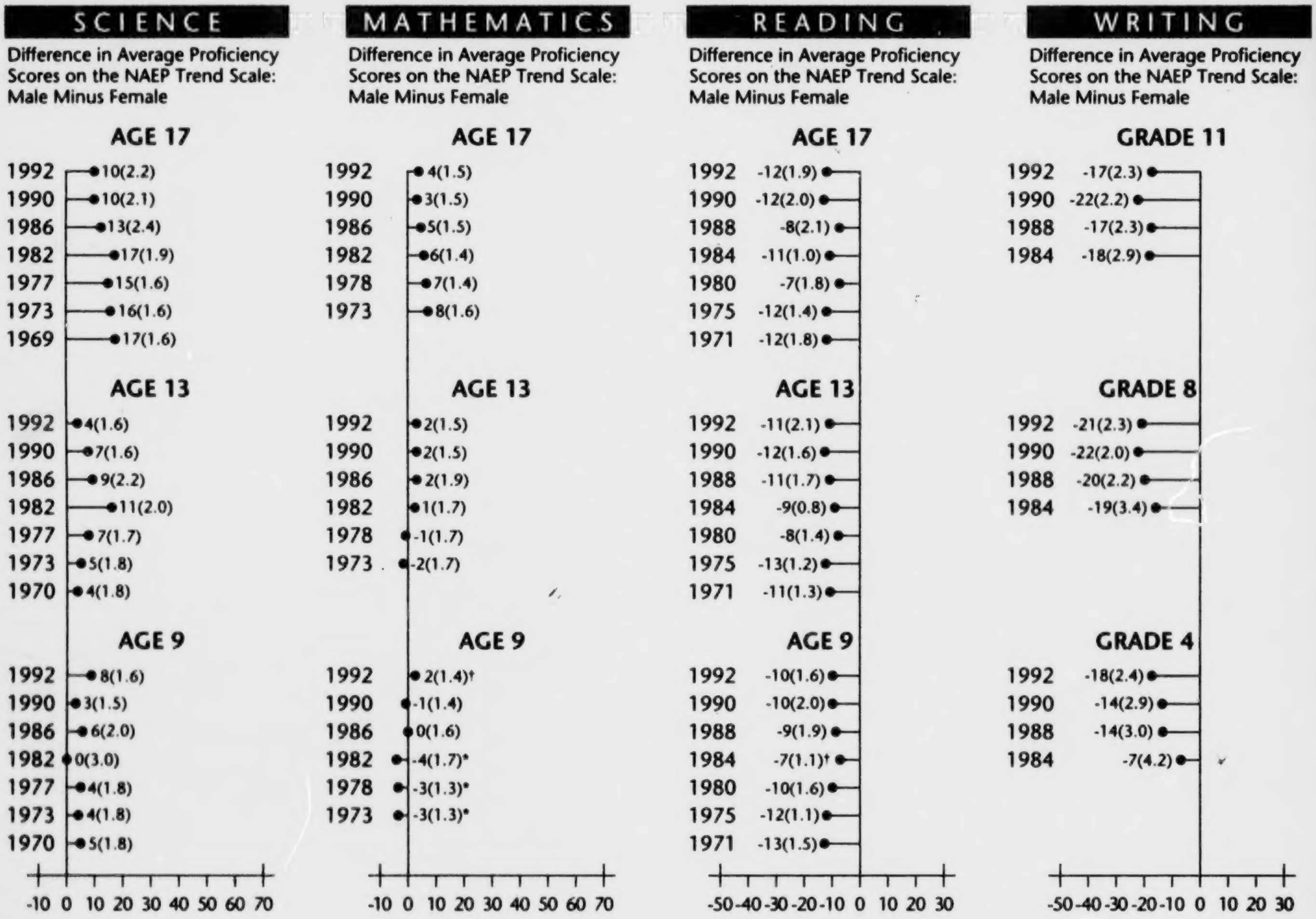
The trends in performance differences by gender are shown in Figure 4. In 1992, males had higher average science achievement than females at all three ages. Despite some fluctuations, none of the apparent changes in the gender gap resulted in a statistically significant difference since 1969-70.

In mathematics between 1973 and 1992, the slight advantage favoring females at age 9 reversed to a slight advantage favoring males. A similar, but not statistically significant, pattern was observed at age 13. At age 17, the slight narrowing of the gender gap was not statistically significant.

In reading, at all three ages the gender performance differences favoring females were essentially identical in 1971 and more than 20 years later in 1992. In writing during the eight years between 1984 and 1992, females consistently had higher average proficiency than males at grades 4, 8, and 11. The apparent increase in the gap at grade 4 (from 7 to 18 points) was not statistically significant.

FIGURE 4

Trends in Differences in Average Proficiency of Male and Female Students Across Subject Areas



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* Statistically significant difference from 1992 at about the 95 percent confidence level.

† Statistically significant difference from the initial assessment year in each subject. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment

Trends in School and Home Contexts for Learning

The results for background questions about school and home contexts for learning indicated relatively few changes. There were, however, some positive trends in students' reports about their schooling.

Students reported an increase in science and mathematics coursework, even though the percentages taking advanced courses remained low. Between 1986 and 1992, the percentage of 17-year-olds (primarily eleventh graders) who had studied biology increased from 88 to 92 percent, the percentage who had studied chemistry increased from 40 to 49 percent, and the percentage who had studied physics from 10 to 14 percent. In mathematics at age 13 (primarily eighth graders), there was a decrease in the percentage taking regular mathematics — from 60 to 51 percent — and an increase in those studying pre-algebra — from 19 to 27 percent. The percentages studying algebra — 17 percent — or other coursework (5 percent) remained relatively stable.

As shown in Table 7, an increase in somewhat more advanced mathematics coursework also was reported by the high school students. Between 1978 and 1992, the percentage of 17-year-olds who had only studied pre-algebra or general mathematics decreased significantly from 20 to 14 percent as did the percentage who had taken Algebra I but no more mathematics courses — from 17 to 14 percent. Those pursuing their coursework through Algebra II increased from 37 to 45 percent and those taking precalculus or calculus from 6 to 10 percent.

Table 7
Highest Level of Mathematics Coursework, Age 17

	PERCENTAGE OF STUDENTS				
	General Mathematics or Pre-Algebra	Algebra I	Geometry	Algebra II	Precalculus or Calculus
1992	14(1.1)	14(0.8)	16(0.9)	45(1.6)	10(0.8)
1978	20(1.0)*	17(0.6)*	16(0.6)	37(1.2)*	6(0.4)*

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

In writing, between 1984 and 1992, eighth and eleventh graders reported an increase in teachers' comments about their ideas and feelings, and less attention to marking mistakes. At grades 4, 8, and 11, increased percentages of students reported engaging in a variety of writing activities, and they reported using more complex writing strategies.

Students also reported increased use of technology in the classroom. Between 1977 and 1992, greater percentages (7 to 11 percent) of 9-year-olds reported having used a calculator, thermometer, or microscope. In 1992, 98 percent reported having used a calculator, 91 percent a thermometer, and 62 percent a microscope.

As illustrated in Table 8, computers are being used much more than they were a decade or so ago. At ages 13 and 17, from 1978 to 1992, students reported considerably more access to and use of computers in mathematics class. At all three ages, students demonstrated improved performance in calculator use during that same time period. Also, between 1984 and 1992, there was a sharp increase in the percentage of students at all three grades (4, 8, and 11) who reported using computers to write stories or papers.

Table 8

Computer Usage in Mathematics and Writing Instruction, Ages 13 and 17

		PERCENTAGE OF STUDENTS ANSWERING "YES"	
		AGE 13	**AGE 17**
Studied Mathematics Through Computer Instruction	1992	53(2.4)	35(2.0)
	1978	14(0.9)*	12(1.1)*
		GRADE 8	**GRADE 11**
Used a Computer To Write Stories or Papers	1992	71(1.9)	82(2.0)
	1984	14(3.1)*	17(2.1)*

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

According to their reports, increased percentages of students were spending at least some time on homework each night. More 9-year-olds reported at least some time (less than one hour) spent on homework across their subjects in 1992 than in 1984, from 42 to 47 percent. Also, more 17-year-olds reported time spent on mathematics homework in 1992 than in 1978. The percentage reporting that they often did mathematics homework increased from 59 to 76 percent, while the percentage who said they only sometimes did homework decreased from 35 to 19 percent. However, 5 percent reported never doing mathematics homework and this figure did not change. Also unchanged was the finding that one-third of the students at age 17 reported that they typically do not have or do daily homework across all their school subjects.

There was evidence of somewhat more time spent on reading for school between 1984 and 1992. At ages 9 and 13, students reported some increase in the pages read each day for all of their subjects, and at ages 13 and 17 students reported some increases for various types of materials read. Still, as shown in Table 9, the amount of reading done for school remains quite low. Approximately one-half the students at all three ages reported reading 10 or fewer pages per day for their schoolwork, either in school or for homework.

Table 9

Pages Read in School and for Homework, Ages 9, 13, and 17

		PERCENTAGES OF STUDENTS		
		AGE 9	AGE 13	AGE 17
More than 20	1992	19(1.0)	14(1.1)	22(1.2)
	1984	13(0.4)*	10(0.4)*	20(1.0)
16 to 20 pages	1992	14(0.5)	13(0.6)	14(0.5)
	1984	13(0.5)	11(0.2)	14(0.4)
11 to 15 pages	1992	14(0.6)	19(0.6)	17(0.6)
	1984	14(0.5)	18(0.4)	18(0.3)
6 to 10 pages	1992	25(0.7)	31(0.8)	26(0.8)
	1984	25(0.5)	35(0.5)*	26(0.6)
5 or fewer	1992	29(1.0)	23(0.9)	20(1.0)
	1984	35(1.0)*	26(0.6)*	21(0.8)

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

Students' perceptions about the value of learning science, mathematics, reading, and writing have been relatively stable across assessments. However, a few positive signs were noted. Between 1977 and 1992, more 17-year-olds reported that science should be required in school, up from 62 to 76 percent. Increased percentages of students at ages 13 and 17 believed that science could help solve a number of global problems; the exception was the problem of world starvation, which a decreased percentage thought that science could help solve. Between 1984 and 1992, greater percentages of students at grades 4 and 11 agreed that writing was of value for communication and employment, and at grades 8 and 11 more reported that writing had some personal and social uses. For example, the percentage of eleventh graders agreeing that "people who write will have a better chance of getting good jobs" rose from 54 to 59 percent.

Based on the relatively small number of questions asked, home contexts for learning appeared to have changed little from assessment to assessment. Between 1984 and 1992, across the ages and grades assessed, students reported that family members were writing more, but reported little change in the extent of reading in the home. Smaller percentages of students reported access to a variety of reading materials in the home. At age 9, students reported no change in the amount of reading for fun, although there was a reported increase in literacy-related activities such as telling a friend about a good book. Finally, at all three ages, students reported an overall increase in their amount of daily television viewing over the past decade, but no change in family rules about watching television since 1986.

Considering that average reading achievement has not improved at any of the three ages since 1984, and has shown signs of declines during the 1980s at age 9 and among Black 17-year-olds, the low amount of reading by our nation's students is worth some attention. As shown in Table 9, these students report very few pages read for their schoolwork each day. As revealed in Table 10, reading for fun was reported as a daily activity by only 56 percent of the 9-year-olds. Further, daily reading for pleasure decreases for older students. In 1992, only 27 percent of the 17-year-olds reported reading for fun on a daily basis and 40 percent reported reading for fun on a monthly basis or even less frequently.

Table 10

Trends in Reading for Fun, Ages 9, 13, and 17

		PERCENTAGES OF STUDENTS		
		AGE 9	AGE 13	AGE 17
Daily	1992	56(1.2)	37(2.4)	27(1.5)
	1984	53(1.0)	35(1.0)	31(0.8)
Weekly	1992	28(1.2)	32(1.8)	33(1.5)
	1984	28(0.8)	35(1.2)	34(1.1)
Monthly	1992	6(0.5)	13(1.5)	18(1.4)
	1984	7(0.6)	14(0.8)	17(0.5)
Yearly	1992	3(0.4)	8(1.1)	12(1.2)
	1984	3(0.3)	7(0.5)	10(0.5)
Never	1992	7(0.7)	10(1.5)	11(1.3)
	1984	9(0.5)	8(0.6)	9(0.6)

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

In contrast to the lack of change in the amount of students' leisure reading, they reported some increase in television viewing (see Table 11). Also, it should be noted that in 1992, from 47 to 64 percent of these students across the three age groups found time to watch three or more hours of television each day.

Table 11

Trends in Television Watching, Ages 9, 13, and 17

	PERCENTAGE OF STUDENTS		
	NUMBER OF HOURS WATCHED PER DAY		
	0-2 Hours	**3-5 Hours**	**6 or More Hours**
Age 9			
1992	40(1.0)	41(0.8)	19(0.8)
1982	44(1.1)*	29(0.6)*	26(1.0)*
Age 13			
1992	36(1.1)	51(1.0)	13(0.6)
1982	45(0.8)*	39(0.4)*	16(0.8)*
Age 17			
1992	53(1.4)	40(1.1)	7(0.5)
1978	69(0.7)	26(0.6)*	5(0.2)*

* Statistically significant difference from 1992 where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentages of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Trend Assessment.

Part I

Trends In Science Achievement from 1969-70 to 1992

Introduction

In the decade since the National Commission on Excellence in Education found American education wanting,[2] subsequent reports and analyses of deficiencies have focused on how to reform the instructional efforts in particular curriculum areas, including science.[3] The publication in 1991 of national education goals[4] and more recently the development of national science standards, which are due to be published in 1994,[5] have led to spirited discussions of how science might be taught more effectively.[6] To help educators and policymakers successfully complete tasks associated with improving science learning, it is important to understand what progress is being made.

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[2] *A Nation at Risk*: The Imperative for Educational Reform (Washington, DC: National Commission on Excellence in Education, 1983).

[3] *Educating Americans for the 21st Century: A Report to the American People and the National Science Board* (Washington, DC: National Science Board Commission on Precollege Education in Mathematics, Science, and Technology, 1983).

Educating Scientists and Engineers: Grade School to Grad School (Washington, DC: Office of Technology Assessment, 1988).

[4] *Educating America: State Strategies for Achieving the National Education Goals* (Washington, DC: National Governors' Association, 1991).

AMERICA 2000: An Education Strategy (Washington, DC: U.S. Department of Education, 1991).

NAEP has monitored progress in science achievement by American students since 1969 by means of assessments of science performance involving nationally representative samples of 9-, 13-, and 17-year-olds attending school. Seven assessments were administered, in the 1969-70, 1972-73, 1976-77, 1981-82, 1985-86, 1989-90, and 1991-92 school years. The first science assessment of 17-year-olds was conducted in the spring of the 1968-69 school year. For convenience, each of the assessments is referred to by the last half of the school year in which it occurred — 1969 or 1970, 1973, 1977, 1982, 1986, 1990, and 1992.

NAEP has based its trend assessment on topics that are organized into content areas and thinking skills.[7] The content areas are life science, physical science, and earth and space science; the thinking skills area encompasses conducting inquiries, solving problems, and knowing science. NAEP also assesses students' understanding of the nature of science in the context of content area knowledge and thinking skills.

In recent years, pedagogic research has explored ways to improve science education. One of the crucial recommendations arising from this research has been to incorporate practical "hands-on" experience into the science curriculum across the grades.[8] In response to the call for more "hands-on" work in science classes, NAEP has wholly revised its main science assessment. Although data collection for the new science assessment has been postponed until 1996, it was originally designed based on *The Science Framework for the 1994 Assessment*.[9]

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[5] *National Science Education Standards*: National Research Council, Washington, DC (in preparation).

[6] *Benchmarks for Science Literacy* (Washington, DC: Project 2061, American Association for the Advancement of Science, 1993).

[7] *Science Objectives: 1985-1986 Assessment*, National Assessment of Educational Progress (1986).

Science Objectives: 1990 Assessment, National Assessment of Educational Progress (1989).

[8] Baxter, G.P., Glaser, R., and Raghavan, K., *Cognitive Theory as the Basis for Design of Innovative Assessment: Design Characteristics of Science Assessments* (Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing, 1992).

The High Stakes of High School Science (Washington, DC: The National Center for Improving Science Education, 1991).

Science and Technology Education for the Middle Years: Frameworks for Curriculum and Instruction (Washington, DC: The National Center for Improving Science Education, 1990).

Science and Technology Education for the Elementary Years: Frameworks for Curriculum and Instruction (Washington, DC: The National Center for Improving Science Education, 1989).

State Initiatives to Improve Science and Mathematics Education (Denver, CO: Education Commission of the States, 1987).

The NAEP trend results were analyzed using item response theory (IRT) scaling technology, which produces estimates of students' science proficiencies on a scale ranging from 0 to 500. This scale is useful for making comparisons across assessments for the three age groups and for making comparisons among demographic subpopulations of students. (The Procedural Appendix contains more detailed explanations of the analysis procedures and definitions of student subpopulations.) Five different levels of science proficiency have been defined on the scale: Level 150 — Knows Everyday Science Facts, Level 200 — Understands Simple Scientific Principles, Level 250 — Applies General Scientific Information, Level 300 — Analyzes Scientific Procedures and Data, and Level 350 — Integrates Specialized Scientific Information.

NAEP reports results for groups of students, not for individual students. The measures of achievement presented in this report are the average performance of groups of students on the NAEP science proficiency scale and the percentages of students in each group who reached each of the five levels of performance on this scale. Because the average proficiencies and the percentages are based on samples of students, they are subject to sampling and measurement error. In the tables and figures presented in this report, each proficiency or percentage is presented with a standard error — an estimate of the sampling error and other errors associated with the observed assessment results. Statistically significant differences between previous assessments and 1992 are denoted with an asterisk, and statistically significant differences between 1969-70 and subsequent assessments are denoted with a dagger. These tests were supported by tests for linear and quadratic components of the trend line, which are noted in the Data Appendix when they were statistically significant.

Each chapter in Part I discusses a different aspect of trends in student performance in science. Chapter 1 describes trends in science proficiency for the nation and demographic subpopulations. Chapter 2 defines levels of science proficiency and presents data on the percentage of students attaining successive levels, both for the nation and demographic subpopulations, and Chapter 3 presents trends in students' experiences in science and attitudes toward science.

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[9] *Science Framework for the 1994 National Assessment of Educational Progress*, pre-publication draft, NAEP Science Consensus Project, Council of Chief State School Officers, National Assessment Governing Board, U.S. Department of Education.

1

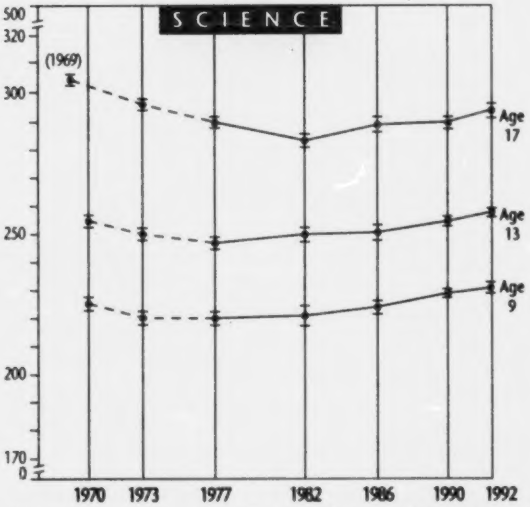
Trends in Science Proficiency for the Nation and Demographic Subpopulations

National Trends in Science Proficiency from 1969-70 to 1992

Figure 1.1 provides an overall picture of changes in the average science proficiency for 9- and 13-year-olds and for in-school 17-year-olds on a single scale ranging from 0 to 500. For 9- and 13-year-olds, the assessments span the 22-year period from 1970 to 1992, and for 17-year-olds, they span the 23-year period from 1969 to 1992. Results for the assessments in 1969 (17-year-olds only), 1970 (9- and 13-year-olds), and 1973 (all age groups) are extrapolated from previous analyses of NAEP data, while results for the 1977, 1982, 1986, 1990, and 1992 assessments are based on more recent analyses. (Please refer to the Procedural Appendix for details on the scaling methodology and information about drawing inferences from the trend analyses.)

Nine-Year-Olds. During the 1970s, the average proficiency of 9-year-olds declined significantly. However, between 1982 and 1992 it increased steadily such that in 1992 the average proficiency of 9-year-olds stood at a level significantly higher than that achieved in 1970.

FIGURE 1.1
Trends in Average Science Proficiency for the Nation, 1969-70 to 1992



	1970	1973	1977	1982	1986	1990	1992
Age 17	305(1.0)*	296(1.0)†	290(1.0)*†	283(1.2)*†	288(1.4)*†	290(1.1)†	294(1.3)†
Age 13	255(1.1)	250(1.1)*†	247(1.1)*†	250(1.3)*†	251(1.4)*	255(0.9)	258(0.8)
Age 9	225(1.2)*	220(1.2)*†	220(1.2)*†	221(1.8)*	224(1.2)*	229(0.8)	231(1.0)†

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1969-70, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Thirteen-Year-Olds. Paralleling the pattern of 9-year-olds, the performance of 13-year-olds decreased significantly between 1970 and 1977, but increased between 1977 and 1992. However, performance in 1992 was not significantly different from that in 1970.

Seventeen-Year-Olds. After substantial declines between 1969 and 1982, performance for 17-year-olds has continued to improve across the past decade. However, average proficiency in 1992 was still significantly lower than that achieved by 17-year-olds in 1969.

Educating America's youth to become scientifically literate has become a primary goal for our nation in recent years and methods for improving science education are major topics of discussion in the classroom, school, and district as evidenced by the presentations and workshops being given around the country.[10] This willingness of educators to provide a forum for discussion on how to improve science education may be paying dividends as evidenced by the significantly increased proficiency between 1982 and 1992 at all three ages.

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[10] National Science Teachers Association 1993 National Convention, Boston, April 1993.
Illinois Science Teachers Association 26th Annual Convention, Collinsville, October 1993.
ASCD 49th Annual Conference and Exhibition, Chicago, March 1994.

Trends in Science Proficiency from 1977 to 1992 by Quartiles

Table 1.1 shows average science proficiency from 1977 to 1992 for students at each age who were in the upper quartile (upper 25 percent), middle two quartiles (middle 50 percent), and the lower quartile (lower 25 percent) of student performance in each of the assessments. From 1977 to 1992, significant increases in proficiency were achieved by 9- and 13-year-old students in all quartiles, indicating that the gains achieved by these age groups on a national level were a result of gains by students at all levels of proficiency. Significant increases in average proficiency were achieved by 17-year-old students in the upper quartile and middle two quartiles between 1977 and 1992. Average proficiency for 17-year-olds in the lower quartile, however, declined and then returned to a level no different than in 1977.

Table 1.1

Trends in Average Science Proficiency by Quartiles, 1977 to 1992

		AVERAGE PROFICIENCY		
Quartile	**Year**	**Age 9**	**Age 13**	**Age 17**
Upper Quartile	1992	273(1.2)†	298(1.0)†	346(0.7)†
	1990	271(0.8)†	297(0.7)†	344(0.7)†
	1986	269(1.2)	292(1.1)*	340(1.1)*†
	1982	268(1.8)	290(0.9)*	329(1.0)*†
	1977	266(0.9)*	290(0.5)*	334(0.9)*
Middle Two Quartiles	1992	232(0.7)†	260(0.5)†	295(1.0)†
	1990	231(0.5)†	256(0.6)*†	292(0.7)*
	1986	226(0.6)*†	252(0.7)*†	290(0.7)*
	1982	222(1.1)*	251(0.6)*	286(0.7)*†
	1977	222(0.5)*	249(0.6)*	291(0.5)*
Lower Quartile	1992	184(1.2)†	214(0.8)†	240(1.9)
	1990	182(0.9)†	211(1.2)†	234(1.2)*†
	1986	177(1.0)*†	209(0.9)*†	235(1.3)†
	1982	171(2.0)*	208(0.8)*†	232(1.3)*†
	1977	170(1.1)*	201(0.8)*	242(0.8)

*Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. †Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1969-70 to 1992 by Race/Ethnicity

Figure 1.2 shows that trends in average science proficiency for White, Black, and Hispanic students differ from one another. At all three ages, the average science proficiency of White students declined from 1969-70 to 1982 and increased from 1982 to 1992. However, the 1992 proficiency level of White 9-year-old students was not significantly higher than that achieved by 9-year-olds in 1970, and the 1992 proficiency level of 17-year-olds remained significantly lower than that achieved by 17-year-olds in 1969. For White students, only 13-year-olds showed a significant increase in average proficiency between 1970 and 1992.

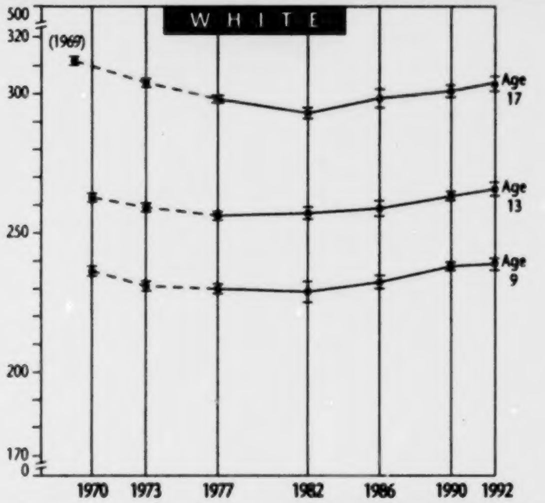
The average science proficiency of 9-year-old Black students in 1992 was significantly higher than that attained in the 1970 assessment despite a slight, but not significant, decline during the 1970s. Thirteen-year-old Black students showed a significant decline in average science proficiency between 1970 and 1973, after which a significant increase was achieved. The average proficiency in 1992, however, was not significantly different from the proficiencies of students in the 1990 or 1970 assessments. Seventeen-year-old Black students showed a significant decline in proficiency from 1969 to 1982, after which their proficiency increased. However, the 1992 level was not significantly different from the level attained in 1969.

The average science proficiency of 9- and 13-year-old Hispanic students was significantly higher in 1992 than in 1977. The average proficiency of Hispanic 17-year-olds fell significantly between 1977 and 1982 but has increased since then. While the result for 1992 indicated an apparent increase in average proficiency since 1977, it was not significant.

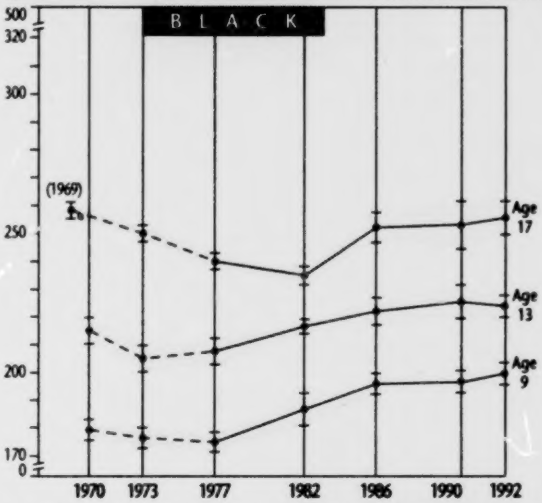
In 1992, the average proficiency of Black and Hispanic students remained well below that of White students. As shown in Figure 2 of the Executive Summary, the proficiency gap between White and Black 9-year-olds decreased significantly between 1970 and 1992. However, despite significant fluctuations across the trend years, performance disparities between White and Black 13- and 17-year-olds in 1992 were essentially the same as those in 1970 and 1969, respectively. The proficiency gap between Hispanic and White students aged 13 showed a significant decrease between 1977 and 1992, but the gap between Hispanic and White 9- and 17-year-olds remained unchanged (See Figure 3). Since 1986, essentially no reductions in performance differences have been observed between White students and either their Black or Hispanic counterparts at any of the three ages assessed.

FIGURE 1.2

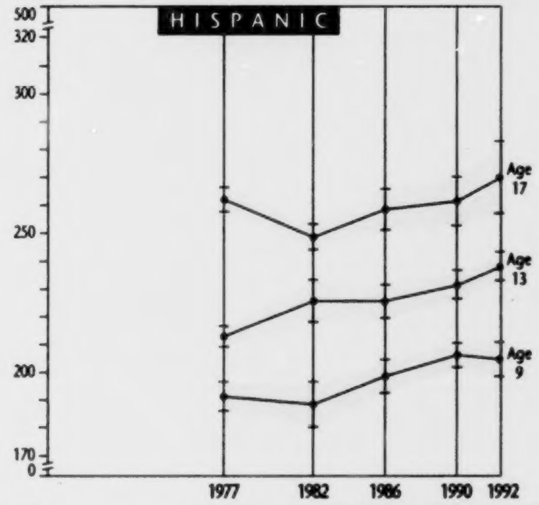
Trends in Average Science Proficiency by Race/Ethnicity, 1969-70 to 1992



	1970	1973	1977	1982	1986	1990	1992
Age 17	312(0.8)* —	304(0.8)† —	298(0.7)*† 83(1.3)*	293(1.0)*† 81(2.0)*	298(1.7)*† 78(0.5)*†	301(1.1)† 73(0.5)†	304(1.3)† 75(0.5)†
Age 13	263(0.8)* —	259(0.8)*† —	256(0.8)*† 80(1.6)*	257(1.1)*† 79(2.1)	259(1.4)* 77(1.0)	264(0.9) 73(0.7)†	267(1.0)† 74(0.5)†
Age 9	236(0.9) —	231(0.9)*† —	230(0.9)*† 80(1.6)	229(1.9)*† 79(2.6)	232(1.2)*† 76(1.1)	238(0.8) 74(1.1)†	239(1.0) 75(0.9)



1970	1973	1977	1982	1986	1990	1992
258(1.5) —	250(1.5)† —	240(1.5)*† 12(1.1)*	235(1.7)*† 12(1.4)	253(2.9) 14(0.3)†	253(4.5) 16(0.3)†	256(3.2) 15(0.3)†
215(2.4) —	205(2.4)*† —	208(2.4)* 13(1.2)	217(1.3) 14(1.9)	222(2.5) 14(0.9)	226(3.1)† 16(0.3)	224(2.7) 16(0.3)
179(1.9)* —	177(1.9)* —	175(1.8)* 14(1.4)	187(3.0)* 14(2.1)	196(1.9)† 15(0.5)	196(2.0)† 16(0.7)	200(2.7)† 16(0.4)



	1977	1982	1986	1990	1992
Age 17	262(2.2) 4(0.9)*	249(2.3)*† 4(1.1)	259(3.8) 6(0.3)*	262(4.4) 7(0.4)†	270(5.6) 7(0.5)†
Age 13	213(1.9)* 5(1.1)	226(3.9)*† 5(1.0)	226(3.1)*† 7(1.1)	232(2.6)† 7(0.5)	238(2.6)† 7(0.5)
Age 9	192(2.7)* 5(0.9)	189(4.2)* 5(1.3)	199(3.1) 6(1.1)	206(2.2)† 6(0.6)	205(2.8)† 6(0.8)

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1969-70 (for proficiencies for White and Black students) or 1977 (for proficiencies for Hispanic students and for all percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

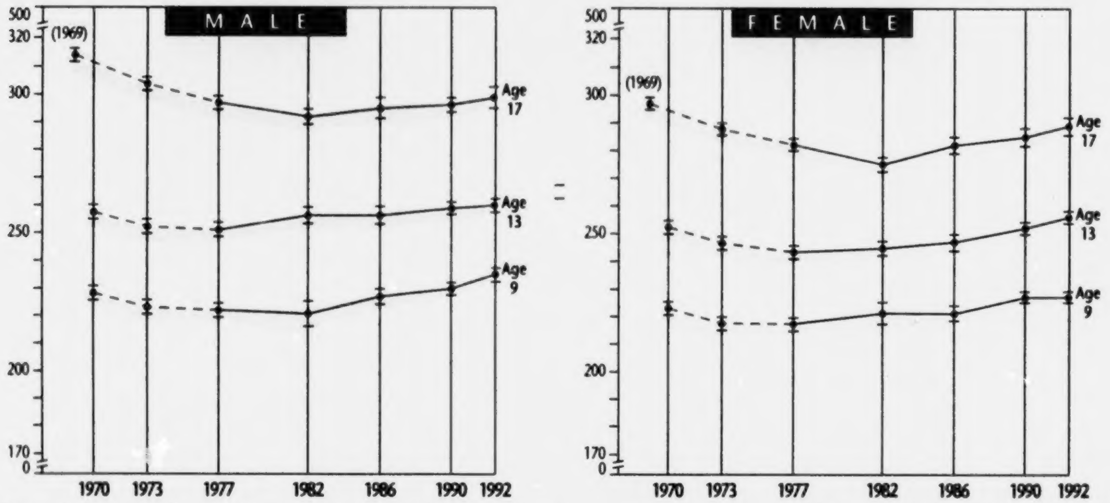
SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1969-70 to 1992 by Gender

Figure 1.3 shows average science proficiency by gender. Average proficiencies for both 9- and 13-year-old males and females declined significantly during the 1970s and then increased significantly during the 1980s. Average proficiency for male 9-year-olds in 1992 was significantly higher than in 1970, whereas the average proficiencies for female 9-year-olds and male and female 13-year-olds were not significantly different. The average proficiency of 17-year-old males and females declined between 1969 and 1982. While performance increased since then for both genders, average achievement in 1992 still remained significantly below the 1969 levels.

The trends of differences in average proficiency between male and female students show different patterns for each age group through the assessment years 1969-70 to 1992 (see Figure 4 in the Executive Summary). However, there were no significant differences in average proficiency by gender between 1969-70 and 1992. In 1992, males had higher average science proficiencies than females at ages 9, 13, and 17.

FIGURE 1.3
Trends in Average Science Proficiency by Gender, 1969-70 to 1992



	1970	1973	1977	1982	1986	1990	1992
Age 17	314(1.2)* —	304(1.2)† —	297(1.2)† 50(0.7)	292(1.4)*† 48(0.7)	295(1.9)† 49(1.2)	296(1.3)† 49(0.9)	299(1.7)† 51(1.2)
Age 13	257(1.3) —	252(1.3)*† —	251(1.3)*† 50(0.3)	256(1.5) 49(0.7)	256(1.6) 50(0.9)	258(1.1) 50(0.6)	260(1.2) 50(0.8)
Age 9	228(1.3)* —	223(1.3)*† —	222(1.3)*† 51(0.4)*	221(2.3)*† 50(1.5)	227(1.4)* 50(0.6)	230(1.1)* 49(0.6)	235(1.2)† 49(0.6)†

	1970	1973	1977	1982	1986	1990	1992
Age 17	297(1.1)* —	288(1.1)† —	282(1.1)*† 50(0.7)	275(1.3)*† 52(0.7)	282(1.5)*† 51(1.2)	285(1.6)† 51(0.9)	289(1.5)† 49(1.2)
Age 13	253(1.2) —	247(1.2)*† —	244(1.2)*† 50(0.3)	245(1.3)*† 52(0.7)	247(1.5)*† 50(0.9)	252(1.1)* 50(0.6)	256(1.0) 50(0.8)
Age 9	223(1.2) —	218(1.2)*† —	218(1.2)*† 49(0.4)*	221(2.0)* 50(1.5)	221(1.4)* 50(0.6)	227(1.0) 51(0.6)	227(1.0) 51(0.6)†

⟟ 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1969-70 (for proficiencies) or 1977 (for percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1969-70 to 1992 by Region

The trends in science achievement for students from the Northeast, Southeast, Central, and Western regions of the country are shown in Figure 1.4.

At all three ages, the average proficiency of students in the Northeast was not significantly different in 1992 from the original assessments in 1969-70.

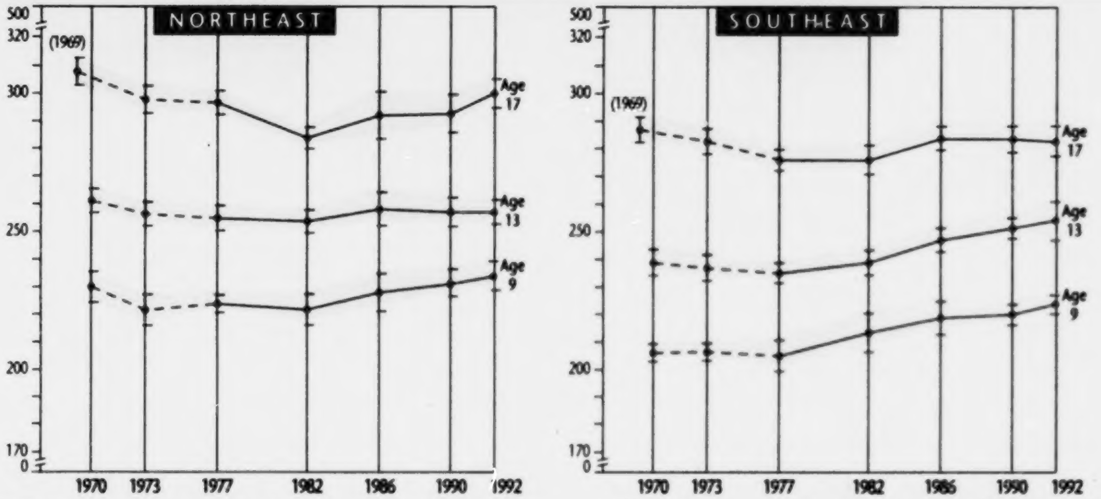
In the Southeast, 9- and 13-year-olds showed a significant increase in performance in 1992 over 1970. In contrast, achievement for 17-year-olds in that region was essentially the same as in the 1969 assessment.

In the Central region, significant decreases were seen during the 1970s for 13- and 17-year-olds, followed by significant increases during the 1980s for students at all three ages. Achievement in 1992, however, was not significantly different from the 1969-70 assessments.

Average proficiency for 9- and 13-year-old students in the Western region has remained relatively stable across time. Despite the pattern of decline and recovery, however, average proficiency for 17-year-olds in 1992 remained below the 1969 average proficiency level.

FIGURE 1.4

Trends in Average Science Proficiency by Region, 1969-70 to 1992

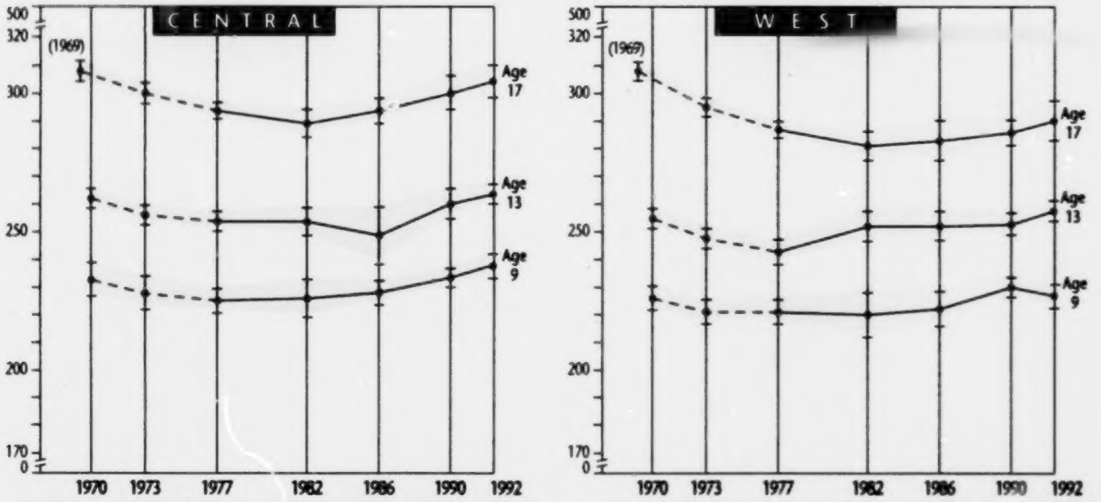


NORTHEAST

	1970	1973	1977	1982	1986	1990	1992
Age 17	308(2.5)	298(2.5)†	296(2.2)†	284(2.0)*†	292(4.3)†	293(3.2)†	300(2.4)
	—	—	24(1.7)	25(3.0)	24(0.8)	22(1.0)	22(0.9)
Age 13	261(2.2)	256(2.2)	255(2.3)	254(2.1)	258(3.1)	257(2.7)	257(2.2)
	—	—	26(1.5)*	24(2.9)	22(1.6)	24(1.0)*	21(0.8)†
Age 9	230(2.9)	222(2.9)*	224(1.6)*	222(2.9)*	228(3.5)	231(2.4)	234(2.8)
	—	—	25(1.5)	19(2.3)	21(1.1)	23(0.9)	21(1.2)

SOUTHEAST

	1970	1973	1977	1982	1986	1990	1992
Age 17	287(2.3)	283(2.3)	276(1.9)†	276(2.7)†	284(2.0)	284(2.4)	283(2.5)
	—	—	18(1.0)*	21(2.4)	23(2.3)	24(0.9)†	25(1.4)†
Age 13	239(2.4)*	237(2.4)*	235(1.8)*	239(2.3)*	247(2.2)	251(1.9)†	254(2.8)†
	—	—	21(1.1)	22(2.3)	25(5.8)	23(0.8)	24(1.6)
Age 9	206(1.6)*	207(1.6)*	205(2.9)*	214(3.6)	219(3.1)†	220(1.9)†	223(1.7)†
	—	—	20(1.2)	23(2.7)	22(4.7)	24(0.9)†	24(1.3)



CENTRAL

	1970	1973	1977	1982	1986	1990	1992
Age 17	308(1.9)	300(1.9)†	294(1.5)*†	289(2.6)*†	294(2.3)*†	300(3.0)	304(2.7)
	—	—	33(1.6)*	30(3.9)	28(2.2)	26(0.9)†	25(1.0)†
Age 13	262(1.8)	256(1.8)	254(1.8)*†	254(2.6)	249(5.3)	260(2.8)	262(2.1)
	—	—	27(1.9)	28(3.9)	25(5.0)	24(0.7)	27(1.0)
Age 9	233(3.0)	228(3.0)*	225(2.2)*	226(3.5)*	228(2.2)*	234(1.7)	238(1.8)
	—	—	30(1.9)	30(4.3)	29(4.0)	24(0.6)*†	28(0.8)

WEST

	1970	1973	1977	1982	1986	1990	1992
Age 17	308(1.7)*	295(1.7)†	286(1.5)†	281(2.7)†	283(3.8)†	286(2.3)†	290(3.8)†
	—	—	24(1.9)	25(2.6)	26(0.9)	28(0.9)	29(0.9)
Age 13	255(1.8)	248(1.8)*†	243(2.3)*†	252(2.8)	252(2.7)	253(2.1)	258(1.6)
	—	—	26(2.1)	26(2.5)	28(1.5)	29(0.9)	29(0.9)
Age 9	226(2.2)	221(2.2)	221(2.2)	220(4.1)	222(3.2)	230(1.8)	227(2.2)
	—	—	25(2.0)	28(2.7)	28(1.6)	28(0.8)	27(0.8)

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1969-70 (for proficiencies) or 1977 (for percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1977 to 1992 by Type of Community

The type of community in which a student is educated heavily influences the student's opportunity to learn. Current research indicates that students attending school in economically disadvantaged areas are less likely to be exposed to a demanding curriculum than those attending school in more advantaged areas.[11] Table 1.2 shows trends in average science proficiency for students attending schools in four different types of communities. Results are not available for assessments conducted prior to 1977.

Nine-year-olds in advantaged urban schools, disadvantaged urban schools, and in schools in communities classified as "other" showed a significant increase in performance between 1977 and 1992. Thirteen-year-olds in extreme rural schools and in schools in other types of communities showed increases between 1977 and 1992 that were statistically significant. Students in disadvantaged and advantaged urban schools showed no statistically significant gains. Little change in average proficiency for 17-year-olds occurred from 1977 to 1992 for students attending schools in community types classified as advantaged urban, disadvantaged urban, and extreme rural. However, those attending schools in other types of communities showed significant improvement between 1977 and 1992.

In 1992, at all three ages, students in advantaged urban communities had significantly higher proficiencies than students in disadvantaged urban communities. Yet, while average proficiencies for 9- and 13-year-olds were higher for students in advantaged urban communities as compared to the proficiencies of students in extreme rural and "other" communities, achievement levels for 17-year-olds in the three types of communities were comparable.

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[11] Oakes, J., *Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science* (Santa Monica, CA: The Rand Corporation, 1990).

O'Day, J. A. and Smith, M. S., "Systemic Reform and Educational Opportunity." In S. Furham, *Designing Coherent Policy: Improving the System* (San Francisco, CA: Jossey-Bass 1993)

Table 1.2

Trends in Average Science Proficiency by Type of Community, 1977 to 1992

		AGE 9		AGE 13		AGE 17	
Type of Community	Year	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Advantaged Urban	1992	11(2.1)	252(2.4)†	10(2.3)	275(3.0)	10(1.8)	298(5.3)
	1990	12(2.2)	241(1.6)*	10(1.9)	268(1.8)	10(1.7)	305(4.3)
	1986	17(3.1)	243(2.4)*	12(3.5)	267(3.8)	13(2.5)	302(7.1)
	1982	11(2.1)	243(4.3)	9(3.1)	276(2.1)†	10(1.9)	304(2.1)
	1977	10(2.0)	242(2.2)*	13(2.7)	268(1.3)	12(2.5)	304(3.2)
Disadvantaged Urban	1992	8(1.7)	202(3.5)†	10(1.5)	224(3.5)	12(1.8)	263(4.6)
	1990	9(2.5)	208(5.9)†	11(2.0)	227(4.6)	9(2.0)	254(7.2)
	1986	6(1.6)	192(3.8)	9(4.3)	223(3.9)	6(1.1)	241(4.0)*†
	1982	6(1.8)	192(5.7)	8(1.6)	222(3.5)	8(1.8)	250(5.5)
	1977	8(1.6)	180(3.4)*	6(1.3)	216(2.8)	8(1.5)	256(3.1)
Extreme Rural	1992	10(2.9)	228(2.6)	9(2.2)	262(3.4)†	11(2.2)	295(2.6)
	1990	8(1.6)	233(4.3)	10(2.4)	249(4.0)*	12(1.7)	294(3.5)
	1986	5(2.2)	224(4.4)	6(3.5)	258(3.0)†	3(1.2)*	296(6.7)
	1982	12(4.6)	212(5.3)*	10(2.5)	245(3.7)*	8(1.7)	283(3.3)*
	1977	8(2.0)	224(3.2)	10(2.3)	245(3.2)*	7(1.4)	289(2.6)
Other	1992	72(3.9)	231(1.0)†	71(3.0)	260(1.1)†	68(3.3)	299(1.8)†
	1990	72(4.0)	229(1.2)†	70(3.4)	259(1.3)†	69(3.1)	292(1.4)*
	1986	72(4.1)	223(1.7)*	74(6.3)	252(1.2)*†	78(3.5)	290(1.6)*
	1982	71(4.8)	222(2.1)*	73(4.2)	251(1.0)*†	74(3.0)	284(1.5)*†
	1977	74(3.3)	220(1.4)*	71(3.9)	247(1.1)*	73(3.2)	291(1.0)*

* Statistically significant difference from 1992, where alpha equals. 05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1977 to 1992 by Parents' Highest Level of Education

Trends in average science proficiency for students of all three ages, grouped by their parents' highest level of education, are shown in Table 1.3. Some increases in average proficiencies were seen for 9-year-olds and 13-year-olds, but not for 17-year-olds, whose proficiency remained fairly stable between 1977 and 1992. Nine-year-olds and 13-year-olds whose parents had less than a high school education, 9-year-olds whose parents had graduated from college, and 13-year-olds whose parents had some education after high school all showed statistically significant increases in proficiency between 1977 and 1992. In the remainder of the groupings by parents' educational level, average proficiencies remained relatively stable across the past 15 years. The average proficiency of 9- and 13-year-olds who did not know their parents' highest level of education increased significantly between 1977 and 1992, whereas the proficiency of 17-year-olds in that group remained relatively stable.

Table 1.3

Trends in Average Science Proficiency by Parents' Highest Level of Education, 1977 to 1992

Level of Education	Year	AGE 9		AGE 13		AGE 17	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Graduated College	1992	42(1.2)†	239(1.2)†	44(1.3)†	269(1.0)	43(1.4)†	308(1.3)
	1990	40(1.1)†	236(1.3)	41(1.2)†	268(1.1)	39(1.4)†	306(1.7)
	1986	38(1.1)†	235(1.4)	38(2.0)*†	264(1.9)	37(1.2)*†	304(2.1)
	1982	42(2.3)†	230(2.3)*	37(1.5)*†	264(1.5)*	32(1.4)*	300(1.7)*†
	1977	23(0.7)*	232(1.4)*	27(1.0)*	266(1.0)	30(1.2)*	309(1.0)
Some Education After High School	1992	8(0.4)	237(2.4)	18(0.7)†	266(1.1)†	25(0.9)†	296(1.7)
	1990	7(0.4)	238(2.1)	17(0.6)	263(1.2)	24(0.9)†	296(1.6)
	1986	7(0.6)	236(2.6)	16(0.6)*	258(1.4)*	24(1.0)†	295(2.5)
	1982	8(0.6)	229(3.2)	17(0.6)	259(1.5)*	22(0.6)*†	290(1.7)†
	1977	7(0.3)	237(1.5)	15(0.5)*	260(1.3)*	17(0.4)*	296(1.1)
Graduated High School	1992	14(0.7)†	222(1.9)	23(0.9)†	246(1.4)	21(0.9)†	280(2.4)
	1990	16(0.7)*†	226(1.7)	27(0.8)*†	247(1.3)	26(1.1)*†	276(1.4)†
	1986	16(0.7)*†	220(1.5)	31(1.3)*	245(1.4)	28(1.[illegible])*†	277(2.0)†
	1982	15(1.1)†	218(3.3)	26(1.1)†	243(1.3)	29(0.9)*†	275(1.6)†
	1977	27(0.5)*	223(1.4)	33(0.6)*	245(1.1)	33(0.6)*	284(0.8)
Less Than High School	1992	4(0.3)†	217(2.6)†	6(0.5)†	234(2.9)†	8(0.6)†	262(3.8)
	1990	5(0.4)†	210(2.7)†	8(0.5)†	233(2.1)†	8(0.6)†	261(2.8)
	1986	4(0.4)†	204(2.9)*	8(1.1)†	229(2.7)	8(0.4)†	258(3.1)
	1982	6(0.9)	198(6.0)*	10(0.6)*†	225(1.9)	13(0.7)*	258(2.4)
	1977	9(0.4)*	198(2.2)*	13(0.7)*	224(1.3)*	15(0.9)*	265(1.3)
I Don't Know	1992	33(0.8)	224(1.4)†	8(0.4)†	232(2.0)	2(0.3)	258(7.4)
	1990	32(0.8)	222(1.2)†	8(0.5)†	224(2.1)*	3(0.4)†	248(5.5)
	1986	35(1.0)	215(1.5)*	8(0.4)†	226(2.7)	3(0.3)†	245(5.5)
	1982	28(1.8)†	211(2.8)*	10(1.2)	229(2.8)	5(0.8)*	252(3.9)
	1977	34(0.7)	211(1.4)*	13(1.1)*	222(1.8)*	4(0.4)*	253(3.2)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1977 to 1992 by Type of School

Students' average science proficiency by type of school attended is presented in Table 1.4. Students aged 9 and 13 who attended public school showed a significant increase in proficiency between 1977 and 1992, whereas the same aged students in private schools (Catholic and other types of private schools combined) showed no gain. The average proficiency of 17-year-olds in both school types remained virtually unchanged between 1977 and 1992, although both groups evidenced a pattern of decline between 1977 and 1982, followed by improvements between 1982 and 1992. In 1992, 9-, 13-, and 17-year-olds attending private schools had higher average science achievement than students of the same ages attending public schools.

Table 1.4

Trends in Average Science Proficiency by Type of School, 1977 to 1992

		AGE 9		AGE 13		AGE 17	
Type of School	Year	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Public	1992	87(1.6)	229(1.0)†	88(1.9)	257(1.0)†	90(2.4)	292(1.3)
	1990	89(2.1)	228(0.9)†	90(1.4)	254(1.1)†	93(1.8)	289(1.1)
	1986	84(2.7)	223(1.4)*	96(1.8)*	251(1.4)*†	96(1.4)	287(1.6)
	1982	90(2.3)	220(2.0)*	89(1.7)	248(1.4)*	90(2.0)	282(1.1)*†
	1977	89(1.2)	218(1.4)*	90(1.4)	245(1.2)*	94(1.8)	288(1.0)
Private	1992	13(1.6)	240(2.7)	12(1.9)	264(2.4)	9(2.1)	312(3.7)
	1990	11(2.1)	237(2.4)	10(1.4)	269(1.8)	7(1.8)	308(6.6)
	1986	16(2.7)	233(2.9)	4(1.8)*	263(6.4)	4(1.4)	321(10.1)
	1982	10(2.3)	232(3.2)	11(1.7)	264(3.2)	10(2.0)	292(2.9)*†
	1977	11(1.2)	235(2.2)	10(1.4)	268(2.1)	6(1.8)	308(2.4)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Proficiency from 1977 to 1992 by Modal Grade

Table 1.5 depicts the trends in average science proficiency by modal grade. A significant increase of students below the modal grade was seen between 1977 and 1992 at ages 9, 13, and 17. The percentage of students at age 9 below modal grade increased from 24 percent in 1977 to 38 percent in 1992; the percentage of 13-year-olds below modal grade increased from 27 percent in 1977 to 37 percent in 1992; and the percentage of 17-year-olds below the modal grade increased from 14 percent in 1977 to 24 percent in 1992.

Table 1.5

Trends in Average Science Proficiency by Modal Grade, 1977-1992

		Age 9		Age 13		Age 17	
Modal Grade	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Below Modal Grade	1992	38(1.2)	215(1.4)	37(1.1)	244(1.4)	24(1.1)	263(2.6)
	1990	35(1.4)†	211(1.5)†	36(1.3)†	240(1.6)†	22(1.0)†	260(2.0)†
	1986	34(1.7)†	205(1.6)*†	33(2.1)	234(1.9)*†	17(0.9)*	259(2.7)
	1982	30(1.9)*†	198(2.9)*	28(1.3)*	229(1.6)*	16(1.0)*	251(2.2)*
	1977	24(1.0)*	198(1.6)*	27(0.9)*	223(1.6)*	14(0.6)*	253(1.4)*
Modal Grade	1992	62(1.2)	240(1.0)	62(1.0)	266(1.0)	70(1.0)	304(1.2)
	1990	65(1.4)†	238(1.0)†	63(1.4)†	264(1.0)†	70(1.0)†	299(1.0)*†
	1986	66(1.7)†	234(1.2)*†	67(2.1)	260(1.3)*	75(1.2)*	294(1.6)*
	1982	70(1.9)*	231(2.2)*	72(1.3)*	258(1.3)*	75(1.0)*	289(1.1)*†
	1977	75(1.0)*	227(1.2)*	72(0.7)*	256(1.0)*	75(0.6)*	295(0.9)*
Above Modal Grade	1992	0(0.1)	—	0(0.1)	—	6(0.5)	305(4.1)
	1990	0(0.1)†	—	0(0.2)	—	8(0.6)*†	298(2.5)
	1986	0(0.1)†	—	0(0.1)	—	8(0.7)†	299(4.3)
	1982	0(0.2)	—	0(0.1)	—	9(0.7)*	292(2.6)†
	1977	1(0.1)*	244(6.2)	1(0.4)	285(3.9)	11(0.5)*	301(1.5)

NOTE: The modal grades are: grade 4 at age 9, grade 8 at age 13, and grade 11 at age 17.

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* Statistically significant difference from 199, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

The reasons for the increase in students below the modal grade are varied and include: a higher school entry age, grade retention, transition programs, and the practice of enrolling children in kindergarten when they are six, rather than five years old.[12]

While this trend may have an unforeseen impact on the increase in average science proficiencies from 1977 to 1992 of 9, 13, and 17-year-olds below the modal grade, it is important to note that those students who remained at the modal grade also showed significant increases in average proficiency over the same time period at ages 9, 13, and 17. It should also be noted that the average proficiencies of students at the modal grades remained significantly higher than those of students below the modal grades.

Summary

The average science proficiency of 9-year-old students has increased significantly since 1970. In contrast, the average proficiency of 13-year-olds showed no significant difference from 1970 and the proficiency of 17-year-olds remained significantly below that achieved by their counterparts in 1969.

Trends since 1977 show 9- and 13-year-olds improved significantly in all quartiles. Seventeen-year-olds also showed significant increases in average proficiency, but only at the upper and middle two quartiles.

While the average proficiency of White 9-year-olds remained constant between 1970 and 1992, performance for White 13-year-olds increased significantly and achievement for White 17-year-olds decreased between 1969 and 1992. Black 9-year-olds made gains, while achievement for Black students at ages 13 and 17 was about the same in 1992 as in 1969-70. Hispanic students made gains between 1977 and 1992 at ages 9 and 13. The average science proficiency of White students at all three age groups remained significantly higher than the average proficiencies of Black and Hispanic students. The performance gap between White and Black students decreased significantly for 9-year-olds between 1970 and 1992, but the gaps in achievement between Black students and White students at ages 13 and 17 have remained relatively stable since 1970 and 1969, respectively. Since 1977, the performance gap between White and Hispanic students has remained essentially the same for 9- and 17-year-olds, but has decreased significantly for 13-year-olds.

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[12] Meisels, S. J., "Doing Harm by Doing Good: Iatrogenic Effects of Early Childhood Enrollment and Promotion Policies," *Early Childhood Research Quarterly*, June 1992, Vol. 7 (2)

Trends in average science proficiency by gender show that only 9-year-old males had higher achievement in 1992 than in 1970. At age 17, both genders had lower average proficiency in 1992 than in 1969. Male students had higher average proficiencies in 1992 than female students at ages 9, 13, and 17. These gaps have fluctuated across assessments, but in 1992 they were not statistically different from those observed in 1970 and 1969, respectively.

When trends in science proficiency are looked at by region, only 9- and 13-year-olds in the Southeast showed significant increases compared to 1970. In the other three regions, average proficiencies of 9- and 13-year-olds were not significantly different between 1970 and 1992. The average proficiencies of 17-year-olds in all regions except the West were essentially the same as in 1969. In the Western region, performance was below the 1969 level, despite a pattern of recent recovery after earlier declines.

The average proficiency of 9-year-olds attending schools in communities classified as advantaged urban, disadvantaged urban, and "other" increased significantly between 1977 and 1992, as did that of 13-year-olds in extreme rural and "other" communities and 17-year-olds in "other" communities.

The average science proficiency of 17-year-old students grouped by their parents' level of education has changed little between 1977 and 1992. Over the same time period, however, significant increases in average science proficiency were seen for 9- and 13-year-old students who reported that their parents had less than a high school education. The average science proficiency also increase significantly for 9-year-olds who reported that their parents had graduated from college and for 13-year-olds who reported that their parents had some education after high school.

Public school students aged 9 and 13 showed significant improvement in average proficiency between 1977 and 1992, whereas the average proficiency of students in private schools remained relatively stable. At age 17, performance was no higher in 1992 than in 1977 for either public or private school students. In 1992, private school students at all three ages had higher average proficiency than their counterparts in public school.

The percentage of 9-, 13-, and 17-year-old students below modal grade increased significantly from 1977 to 1992, as did their average proficiencies. Their average proficiencies still, however, remained lower than the average proficiencies of 9-, 13-, and 17-year-olds at modal grade.

2

Trends in Levels of Science Proficiency for the Nation and Demographic Subpopulations

National Trends in Levels of Science Proficiency from 1977 to 1992

To describe students' knowledge and skills in science, five levels of proficiency on the science trend scale have been anchored by a panel of science specialists. Empirical procedures were used to delineate sets of items that students who performed at one level were more likely to answer correctly than students who performed at the next lower level. Panel members then identified the types of knowledge and skills assessed by these sets of items and used these skills as a basis for constructing the descriptions of performance at five scale levels — 150, 200, 250, 300, and 350. Many, but not all, of the students at a certain level correctly answered items measuring the skills described for that level. These descriptions are presented in Figure 2.1.

Figure 2.1 — Levels of Science Proficiency

Level 350: Integrates Specialized Scientific Information

Students at this level can infer relationships and draw conclusions using detailed scientific knowledge from the physical sciences, particularly chemistry. They also can apply basic principles of genetics and interpret the social implications of research in this field.

Level 300: Analyzes Scientific Procedures and Data

Students at this level can evaluate the appropriateness of the design of an experiment. They have more detailed scientific knowledge, and the skill to apply their knowledge in interpreting information from text and graphs. These students also exhibit a growing understanding of principles from the physical sciences.

Level 250: Applies General Scientific Information

Students at this level can interpret data from simple tables and make inferences about the outcomes of experimental procedures. They exhibit knowledge and understanding of the life sciences, including a familiarity with some aspects of animal behavior and of ecological relationships. These students also demonstrate some knowledge of basic information from the physical sciences.

Level 200: Understands Simple Scientific Principles

Students at this level are developing some understanding of simple scientific principles, particularly in the life sciences. For example, they exhibit some rudimentary knowledge of the structure and function of plants and animals.

Level 150: Knows Everyday Science Facts

Students at this level know some general scientific facts of the type that could be learned from everyday experiences. They can read simple graphs, match the distinguishing characteristics of animals, and predict the operation of familiar apparatus that work according to mechanical principles.

Table 2.1 contains the trend data for the five anchor levels. In 1992, 97 percent of 9-year-old students performed at or above Level 150, 78 percent reached at least Level 200, and 33 percent were at Level 250 or higher. In 1992, the percentages of 9-year-olds at or above Levels 150, 200, and 250 were significantly higher than in 1977, 1982, or 1986. Three percent of 9-year-olds performed at or above Level 300 and virtually no 9-year-olds reached Level 350, which may be understandable considering the basic nature of the science curriculum in elementary schools. The small percentages of 9-year-olds performing at these two higher levels have remained unchanged since 1977.

Table 2.1

Trends in Percentages of Students At or Above Five Science Proficiency Levels, 1977 to 1990

		ASSESSMENT YEARS				
Proficiency Levels	**Age**	**1977**	**1982**	**1986**	**1990**	**1992**
Level 350	9	0(0.0)	0(0.1)	0(0.1)	0(0.0)	0(0.1)
Integrates Specialized	13	1(0.1)*	0(0.1)	0(0.1)†	0(0.1)	0(0.1)†
Scientific Information	17	8(0.4)	7(0.4)*	8(0.7)	9(0.5)	10(0.7)
Level 300	9	3(0.3)	2(0.7)	3(0.5)	3(0.3)	3(0.3)
Analyzes Scientific	13	11(0.5)	10(0.7)	9(0.9)	11(0.6)	12(0.8)
Procedures and Data	17	42(0.9)*	37(0.9)*†	41(1.4)*	43(1.3)	47(1.5)†
Level 250	9	26(0.7)*	24(1.8)*	28(1.4)*	31(0.8)†	33(1.0)†
Applies General	13	49(1.1)*	51(1.6)*	52(1.6)*	56(1.0)*†	61(1.1)†
Scientific Information	17	82(0.7)	77(1.0)*†	81(1.3)	81(0.9)	83(1.2)
Level 200	9	68(1.1)*	71(1.9)*	72(1.1)*†	76(0.9)†	78(1.2)†
Understands Simple	13	86(0.7)*	90(0.8)*†	92(1.0)†	92(0.7)†	93(0.5)†
Scientific Principles	17	97(0.2)	96(0.5)†*	97(0.5)	97(0.3)	98(0.5)
Level 150	9	94(0.6)*	95(0.7)*	96(0.3)*†	97(0.3)†	97(0.3)†
Knows Everyday	13	98(0.2)*	100(0.1)†	100(0.1)†	100(0.1)†	100(0.1)†
Science Facts	17	100(0.0)	100(0.1)	100(0.1)	100(0.2)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Across the science trend assessments, virtually all 13-year-olds performed at or above Level 150. In 1992, 93 percent of 13-year-olds reached Level 200 and 61 percent reached Level 250. The percentage of 13-year-olds at or above Level 200 was significantly higher than in 1977 and 1982 and the percentage of 13-year-olds at Level 250 was significantly higher than in each of the four previous assessments. Twelve percent of 13-year-olds performed at or above Level 300, but almost none attained Level 350. The percentage of 13-year-olds reaching Level 300 has remained unchanged since 1977, while the percentage reaching Level 350 has decreased significantly.

Except at Level 300, where a significant increase in the percentage of 17-year-olds was seen, the percentages of 17-year-olds at or above the other levels were essentially the same in 1992 as in 1977. In 1992, virtually all 17-year-olds reached Level 150, 98 percent reached Level 200, 83 percent performed at or above Level 250, and 47 percent attained Level 300. Ten percent of in-school 17-year-olds reached Level 350.

Level 150: Knows Everyday Science Facts. The results from 1977 through 1992 showed that nearly all students at the three ages assessed demonstrated some knowledge of general scientific facts.

Level 200: Understands Simple Scientific Principles. At ages 9 and 13, the percentages of students performing at or above proficiency Level 200 have increased significantly since 1977, while at age 17 the percentage has remained fairly constant.

Level 250: Applies General Scientific Information. The percentages of 9- and 13-year-olds at or above proficiency Level 250 increased significantly since 1977 while the percentage of 17-year-olds at or above proficiency Level 250 has remained generally constant.

Level 300: Analyzes Scientific Procedures and Data. The percentages of 9- and 13-year-old students at or above proficiency Level 300 have remained fairly constant for each of the assessments from 1977 to 1992. The percentage of 17-year-olds at or above proficiency Level 300 has increased significantly since 1977.

Level 350: Integrates Specialized Scientific Information. The percentages of 9- and 17-year-old students who reached Level 350 have not changed significantly since 1977. The percentage of 13-year-olds who reached Level 350 has decreased significantly since 1977.

The trends in the percentages of 9-, 13-, and 17-year-olds at or above each level of proficiency showed some gains since 1977. At ages 9 and 13, there were significant increases in the percentages of students performing at or above the 150, 200, and 250 levels, and a higher percentage of 17-year-olds at or above Level 300 showed an increased ability to analyze scientific procedures and data. The percentage of students performing at or above Level 350 remained unchanged or decreased significantly despite the emphasis in the education community on critical thinking skills.[13]

Trends in Levels of Science Proficiency from 1977 to 1992 by Race/Ethnicity

Table 2.2 shows the percentages of White, Black, and Hispanic students performing at or above each of the proficiency levels for the period from 1977 to 1992.[14]

The percentages of White, Black, and Hispanic 9- and 13-year-olds at or above Level 150 increased significantly across the 15-year span. However, 9-year-old White students continued to outperform their Black and Hispanic counterparts. In 1992, 100 percent of the White and Hispanic 13-year-olds and 98 percent of the Black 13-year-olds demonstrated knowledge of everyday science facts by performing at or above Level 150. Virtually 100 percent of 17-year-olds in each of the racial/ethnic groups performed at or above Level 150 in 1992.

From 1977 to 1992, 9- and 13-year-old students in all three racial/ethnic classifications showed significant improvement at Level 200. In addition, 17-year-old Black students showed significant improvement. Twenty-seven percent of Black 9-year-olds and 42 percent of Hispanic 9-year-olds reached this level in 1977. In 1992, these percentages stood at 51 percent and 56 percent, respectively. In contrast, the percentage of 9-year-old White students at or above Level 200 was 77 percent in 1977 and 86 percent in 1992. A similar pattern can be seen for 13-year-olds. In 1992, White students outperformed Black and Hispanic students at ages 9 and 13, while 17-year-old White students outperformed Black students but not Hispanic students.

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[13] *Raising Standards for American Education* (Washington, DC: The National Council on Education Standards and Testing, U.S. Government Printing Office, 1992).

[14] Trends in percentages of students performing at or above each of the five levels in all assessments by race/ethnicity and gender are presented in the Data Appendix.

The percentage of White and Black 9-year-olds performing at or above Level 250 increased significantly in 1992. In 1992, 39 percent of White 9-year-olds, 9 percent of Black 9-year-olds, and 12 percent of Hispanic 9-year-olds were at or above Level 250. White, Black, and Hispanic 13-year-olds showed significant gains from 1977 to 1992. In 1992, 71 percent of White 13-year-olds, 26 percent of Black 13-year-olds, and 36 percent of Hispanic 13-year-olds performed at or above Level 250. The only significant performance gain by 17-year-olds at Level 250 was by Black students. In 1992, 90 percent of White 17-year-olds, 56 percent of Black 17-year-olds, and 68 percent of Hispanic 17-year-olds were able to apply some general scientific information. In 1992, the percentage of White 9-, 13-, and 17-year-olds performing at or above Level 250 was higher than the percentage of Black and Hispanic 9-, 13-, and 17-year-olds reaching the same level.

In 1992, the only significant increase in the percentage of students at or above Level 300 was seen for White 17-year-olds. Fifteen percent of White 13-year-olds reached this level compared to very few (2 to 3 percent) of their Black and Hispanic counterparts. At age 17, 55 percent of White students performed at or above Level 300 compared to 14 percent of the Black students and 23 percent of the Hispanic students. In 1992, the percentage of White students at all three age levels reaching Level 300 was higher than the percentage of Black and Hispanic students.

In 1992, no 9- or 13-year-olds in any of the three racial/ethnic groups performed at Level 350. The percentage of White 17-year-olds reaching Level 350 showed a significant increase from 10 percent to 13 percent. Very few (1 to 2 percent) Black or Hispanic 17-year-olds performed at or above Level 350, continuing the trend set in 1977.

Table 2.2

Trends in Percentages of Students At or Above Five Science Proficiency Levels by Race/Ethnicity, 1977 to 1992

		ASSESSMENT YEARS					
		1977			1992		
Proficiency Levels	Age	White	Black	Hispanic	White	Black	Hispanic
Level 350	9	0(0.0)	0(0.0)	0(0.0)	0(0.1)	0(0.0)	0(0.0)
Integrates Specialized	13	1(0.1)*	0(0.0)	0(0.1)	0(0.1)	0(0.0)	0(0.0)
Scientific Information	17	10(0.4)*	0(0.2)	2(0.6)	13(0.9)	1(1.1)	2(1.2)
Level 300	9	4(0.3)	0(0.1)	0(0.4)	4(0.4)	0(0.3)	0(0.4)
Analyzes Scientific	13	13(0.5)	1(0.4)	2(0.8)	15(1.0)	2(0.8)	3(1.3)
Procedures and Data	17	48(0.7)*	8(1.0)	18(2.1)	55(1.7)	14(2.5)	23(3.8)
Level 250	9	31(0.7)*	4(0.6)*	9(1.7)	39(1.1)	9(1.4)	12(1.8)
Applies General	13	56(0.9)*	15(1.7)*	18(1.8)*	71(1.3)	26(2.8)	36(2.9)
Scientific Information	17	88(0.4)	40(1.5)*	62(1.7)	90(1.0)	56(3.7)	68(6.6)
Level 200	9	77(0.7)*	27(1.5)*	42(3.1)*	86(0.9)	51(3.5)	56(4.3)
Understands Simple	13	92(0.5)*	57(2.4)*	62(2.4)*	98(0.4)	74(2.8)	86(2.6)
Scientific Principles	17	99(0.1)	84(1.3)*	93(1.7)	99(0.3)	92(1.8)	95(2.6)
Level 150	9	98(0.3)*	72(1.8)*	85(1.8)*	99(0.1)	91(1.8)	92(1.7)
Knows Everyday	13	100(0.1)*	93(1.0)*	94(1.3)*	100(0.0)	98(0.6)	100(0.5)
Science Facts	17	100(0.0)	98(0.3)*	100(0.2)	100(0.0)	100(0.3)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Levels of Science Proficiency from 1977 to 1992 by Gender

Table 2.3 shows the percentage of male and female students performing at or above each of the five proficiency levels in both 1977 and 1992.

There were significant increases between 1977 and 1992 in the percentages of both male and female 9- and 13-year-old students at or above Levels 150, 200, and 250. The percentages of 9- and 13-year-old males and females and 17-year-old males at or above Level 300 remained relatively constant, although a significant increase occurred for female 17-year-olds. Essentially no changes for either gender were observed at Level 350.

Table 2.3

Trends in Percentages of Students At or Above Five Science Proficiency Levels by Gender, 1977 to 1992

		ASSESSMENT YEARS			
		1977		1992	
Proficiency Levels	**Age**	**Male**	**Female**	**Male**	**Female**
Level 350	9	0(0.0)	0(0.0)	0(0.1)	0(0.0)
Integrates Specialized	13	1(0.2)*	1(0.1)	0(0.1)	0(0.2)
Scientific Information	17	12(0.6)	5(0.4)	14(1.0)	7(1.0)
Level 300	9	4(0.3)	3(0.3)	5(0.6)	2(0.3)
Analyzes Scientific	13	13(0.6)	9(0.5)	14(1.1)	10(0.8)
Procedures and Data	17	49(1.1)	35(1.0)*	51(2.0)	42(1.7)
Level 250	9	27(0.9)*	24(0.9)*	37(1.7)	29(1.1)
Applies General	13	52(1.3)*	45(1.2)*	63(1.4)	60(1.4)
Scientific Information	17	85(0.7)	78(1.0)	85(1.4)	82(1.4)
Level 200	9	70(1.2)*	66(1.1)*	80(1.4)	76(1.2)
Understands Simple	13	87(0.8)*	85(0.8)*	93(0.8)	93(0.7)
Scientific Principles	17	98(0.2)	96(0.3)	98(0.6)	98(0.7)
Level 150	9	94(0.5)*	93(0.7)*	98(0.3)	97(0.5)
Knows Everyday	13	99(0.2)*	98(0.2)*	100(0.2)	100(0.2)
Science Facts	17	100(0.0)	100(0.1)	100(0.1)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1977, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Summary

The percentages of 9-year-olds at or above the five proficiency levels did not change significantly between 1990 and 1992. However, when compared to 1977, 1982, and 1986, there were significant increases in the percentages of students reaching Levels 150, 200, and 250. In 1992, 97 percent reached Level 150, 78 percent Level 200, and 33 percent Level 250. The low percentages of 9-year-old students performing at Levels 300 and 350 remained fairly constant across the 15-year trend period.

Nine-year-old White students continued to outperform their Black and Hispanic counterparts, with the exception of Level 350, where virtually no students succeeded at tasks requiring them to integrate specialized knowledge. In 1992, higher percentages of both 9-year-old male and female students reached Levels 150, 200, and 250 than in 1977.

The percentages of 13-year-olds at or above the lower performance levels have not changed significantly since 1990, except at Level 250, where the percentage increased. However, there have been significant increases between 1977 and 1992, such as a large increase — from 49 to 61 percent — at Level 250. In 1992, 13-year-old White students outperformed their Black and Hispanic counterparts at Levels 200, 250, and 300. Gains were made by 13-year-olds in all three racial/ethnic groups at Levels 200 and 250, but performance remained virtually unchanged at Levels 300 and 350. Males and females both demonstrated improved performance between 1977 and 1992 at Levels 150, 200, and 250.

The percentages of 17-year-olds reaching the five proficiency levels in 1992 remained essentially the same as in 1977. The exception was Level 300, where the percentage of students who demonstrated success in analyzing scientific procedures and data increased significantly. At age 17, a significant increase in females' performance was seen at Level 300. Similarly, White 17-year-olds showed an increase in performance at Level 300.

From 1977 to 1992, the highest level showing significant performance gains for 9- and 13-year-olds was Level 250 — applications of general scientific information. Both males and females showed gains, as did White, Black, and Hispanic students. The highest level showing significant performance gains for 17-year-olds was Level 300 — analyzes scientific procedures and data. White 17-year-olds and females contributed significantly to this gain. The percentage of 17-year-old students reaching Level 350 — integrates specialized scientific information — remained at 10 percent.

3

Trends in Students' Experiences in Science and Attitudes Toward Science

Introduction

Ways of improving science education have been at the forefront of pedagogic discussion for a number of years.[15] Central to recommendations for improvement have been the need to increase the amount of time spent teaching science in grades K-12 and the incorporation of practical

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[15] *Educating Scientists and Engineers: Grade School to Grad School* (Washington, DC: Office of Technology Assessment, 1988).

Science for All Americans: A Project 2061 Report on Literacy Goals in Science, Mathematics, and Technology (Washington, DC: American Association for the Advancement of Science, 1989).

Fulfilling the Promise: Biology Education in the Nation's Schools (Washington, DC: National Research Council, Committee on High School Biology Education, 1990).

Assessment in the Service of Instruction (Washington, DC: American Association for the Advancement of Science, 1990).

"hands-on" experience,[16] so that students can learn the skills necessary for becoming competent in science.

Chapter Three presents trends in the frequency of participation by 9-year-olds in specific science activities, trends in the science courses taken by 17-year-olds, and trends in 13- and 17-year-old students' attitudes about the value of science and how science can be used for solving world problems.

Trends in Participation in Science Activities at Age 9 from 1977 to 1992

It is important for elementary school children to develop skills that are a prerequisite for "doing" science. Table 3.1 summarizes trends between 1977 and 1992 in 9-year-old students' reports about whether they had ever participated in six different science activities.

In 1992, 98 percent of 9-year-olds reported having used a calculator, and 91 percent reported having used a scale and a thermometer. Sixty-two percent reported that they had used a microscope. The percentages of 9-year-olds reporting using a calculator, a thermometer, and a microscope were significantly greater in 1992 than in 1977. In 1992, the proportions of students who had experimented with batteries and bulbs or who had used a scale to weigh things remained essentially constant, at 49 and 91 percent, respectively. The percentage of students experimenting with plants showed a significant decrease between 1977 and 1992, from 70 to 64 percent. Interestingly, more students were using fairly standard equipment, but the percentages of students who conducted routine experiments with batteries and bulbs, scales, or plants remained constant or decreased.

In both 1977 and 1992, students who reported using a scale, thermometer, microscope, and calculator — and who reported having experimented with living plants — had a higher average science proficiency than students who had reported not using the equipment or engaging in experiments with plants. Students who had experimented with living plants and with batteries and bulbs showed a proficiency that was about the same as that of students who had not.

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[16] Baxter, G.P., Glaser, R., and Raghavan, K., *Cognitive Theory as the Basis for Design of Innovative Assessment: Design Characteristics of Science Assessments* (Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing, 1992).

The High Stakes of High School Science (Washington, DC: The National Center for Improving Science Education, 1991).

Science and Technology Education for the Middle Years: Frameworks for Curriculum and Instruction (Washington, DC: The National Center for Improving Science Education, 1990).

Science and Technology Education for the Elementary Years: Frameworks for Curriculum and Instruction (Washington, DC: The National Center for Improving Science Education, 1989).

State Initiatives to Improve Science and Mathematics Education (Denver, CO: Education Commission of the States, 1987).

Table 3.1

Trends in Participation in Science Activities at Age 9, 1977 to 1992

		STUDENTS ANSWERING "YES"		STUDENTS ANSWERING "NO"	
Have you ever . . .	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Experimented with living plants?	1992	64(1.1)	234(1.6)	32(1.0)	226(1.8)
	1977	70(1.4)*	221(2.3)*	27(1.3)*	217(2.8)*
Experimented with batteries & bulbs?	1992	49(1.9)	233(1.8)	46(1.9)	231(1.7)
	1977	51(1.4)	225(2.8)	43(1.4)	217(2.1)*
Used a scale to weigh things?	1992	91(0.7)	234(1.4)	8(0.5)	218(4.0)
	1977	89(0.8)	220(2.3)*	9(0.7)	202(4.5)*
Used a thermometer?	1992	91(0.6)	234(1.4)	7(0.5)	217(3.5)
	1977	84(1.0)*	222(2.2)*	14(0.9)*	199(2.7)*
Used a microscope?	1992	62(1.4)	237(1.5)	33(1.4)	225(2.0)
	1977	53(1.4)*	222(2.5)*	43(1.5)*	214(2.1)*
Used a calculator?	1992	98(0.3)	233(1.4)	2(0.3)	203(5.8)
	1977	87(1.2)*	222(2.2)*	11(1.0)*	195(3.4)

* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). The percentage of students does not total 100 percent because a small percentage reported that they were not certain whether they had participated in the activities.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Trends in Science Course Taking at Age 17 from 1986 to 1992

In order to become scientifically literate, it is important for students to take a number of different science courses. To obtain an indicator of trends in course taking, since 1986 NAEP has asked 17-year-olds if they had studied or were currently studying general science, biology, chemistry, and/or physics. The results are presented in Table 3.2.

The percentage of students who reported having taken general science remained constant from 1986 to 1992, whereas the percentage of students who reported having taken biology increased significantly betweeen 1986 and 1992 — from 88 to 92 percent. Biology continued to be the subject that most students studied, followed closely by general science. Chemistry coursework

Table 3.2

Trends in Science Course Taking at Age 17, 1986 to 1992

	TOTAL		MALE		FEMALE	
General Science						
1992	84(1.0)	296(1.3)	86(1.1)	301(1.6)	83(1.5)	290(1.5)
1990	82(1.3)	292(1.1)	84(1.3)	298(1.4)	81(1.7)	286(1.4)
1986	83(1.3)	290(1.3)*	84(1.5)	298(1.7)	82(1.6)	283(1.6)*
Biology						
1992	92(0.9)	299(1.1)	91(1.2)	305(1.5)	93(1.0)	293(1.4)
1990	89(0.9)*	296(1.0)	87(1.1)*	302(1.3)	91(1.0)	290(1.5)
1986	88(1.0)*	294(1.5)*	87(1.1)*	301(1.8)	88(1.1)*	287(1.7)*
Chemistry						
1992	49(1.7)	319(1.0)	47(1.9)	325(1.5)	51(2.0)	312(1.5)
1990	45(1.5)	316(1.4)	45(1.7)	324(1.9)	45(1.7)	310(1.7)
1986	40(1.6)*	312(2.1)*	42(1.8)	319(2.7)*	39(2.1)*	304(2.2)*
Physics						
1992	14(1.1)	306(3.9)	15(1.0)	310(4.7)	12(1.5)	302(4.1)
1990	14(1.5)	304(3.7)	16(1.8)	311(9.3)	13(1.5)	295(4.2)
1986	11(0.9)	296(4.7)	14(1.3)	305(6.8)	8(0.7)*	282(3.8)*

* Statistically significant difference from 1992, where alpha equal .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

showed a significant gain, from 40 percent in 1986 to 49 percent in 1992. Physics remained the least studied subject, with 11 to 14 percent of students taking it between 1986 and 1992. It should be borne in mind, however, that the information was given by students who were generally in grade 11 and more students may take physics in their senior year.

Significant increases in the percentages of students taking biology were shown in 1992 for White and Black students and for both genders. More White students and females reported having taken chemistry in 1992 than in 1986. The percentages of White students and females who took physics also increased.

Table 3.2 *continued*

Trends in Science Course Taking at Age 17, 1986 to 1992

	WHITE		BLACK		HISPANIC	
General Science						
1992	86(1.0)	304(1.3)	79(3.6)	259(3.9)	79(3.2)	274(5.4)
1990	84(1.4)	300(1.1)	76(3.1)	258(4.5)	82(4.4)	266(4.8)
1986	84(1.6)	297(1.5)*	83(2.6)	257(2.8)	82(3.5)	264(4.5)
Biology						
1992	93(1.0)	308(1.1)	92(1.9)	260(3.1)	87(4.1)	276(4.5)
1990	90(0.9)	304(1.0)*	87(2.2)	260(4.6)	79(4.4)	270(5.0)
1986	89(1.1)*	301(1.8)*	84(2.7)*	260(3.1)	84(3.4)	265(3.7)
Chemistry						
1992	52(1.8)	325(1.3)	36(3.2)	282(3.6)	36(5.6)	298(4.1)
1990	36(1.7)*	324(1.3)	46(4.0)	280(7.3)	31(4.3)	294(6.0)
1986	42(1.8)*	317(2.2)*	29(2.6)	275(6.4)	24(2.2)	281(8.7)
Physics						
1992	13(1.2)	319(3.5)	14(1.9)	251(7.4)	13(2.3)	282(11.1)
1990	13(1.7)	317(2.6)	15(2.7)	263(11.8)	17(4.5)	253(18.3)
1986	10(0.8)*	316(4.4)	18(3.5)	239(5.4)	13(2.8)	256(17.6)

* Statistically significant difference from 1992, where alpha equal .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Students who reported taking general science, biology, or chemistry showed a significant increase in average proficiency between 1986 and 1992, whereas average proficiency did not change significantly for students who reported taking physics. The average proficiency of females who reported taking general science, biology, chemistry, or physics increased significantly from 1986 to 1992, whereas the average proficiency of males who reported taking general science, biology, or physics remained fairly constant. Males who reported taking chemistry showed a significant increase in average proficiency from 1986 to 1992. White students who reported taking general science, biology, or chemistry showed a significant increase in average proficiency between 1986 and 1992, but those who reported taking physics showed no significant increase. The average proficiency of Black and Hispanic students who reported taking general science, biology, chemistry, or physics remained fairly constant between 1986 and 1992.

Trends and Attitudes About Science at Ages 13 and 17 from 1977 to 1992

Thirteen- and 17-year-old students were asked whether they agreed or disagreed with several statements relating to attitudes about the value of science. The results are shown in Table 3.3.

In 1992, 53 percent of 13- and 17-year-olds felt that much of what was learned in science classes was useful in everyday life. For 13-year-olds this was a significant decrease since 1977, when 58 percent so reported. The percentage of 17- year-old students agreeing with the statement did not change.

From 1977 to 1992 there was no significant change in 13- and 17-year-olds' perception that much of what was learned in science classes will be useful in the future. In 1992, 72 percent of the 13-year-olds and 68 percent of the 17-year-olds agreed with the statement.

The percentage of 13-year-olds agreeing that science should be required in school did not change significantly between 1977 and 1992 (70 percent and 73 percent, respectively). In contrast, the percentage of 17-year-olds who agreed with the statement increased significantly between 1977 and 1992 (62 percent and 76 percent, respectively). The average proficiency of 13- and 17-year-old students strongly agreeing or agreeing with the statements increased significantly. Thirteen- and 17-year-olds who strongly disagreed, disagreed, or remained undecided showed no significant change in average proficiency, with one exception: Seventeen-year-old students who strongly disagreed, disagreed, or remained undecided that science should be required in school shared a significant decrease in average proficiency.

Table 3.3

Trends in Attitudes About the Value of Science at Ages 13 and 17, 1977 to 1992

			STRONGLY AGREE OR AGREE		UNDECIDED, DISAGREE, OR STRONGLY DISAGREE	
	Age	Year	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Much of what you learn in science classes is useful in everyday life.	13	1992	53(0.8)	258(1.7)	47(0.8)	260(1.6)
		1977	58(1.4)*	249(2.3)*	42(1.4)*	256(2.1)
	17	1992	53(1.1)	298(2.5)	47(1.1)	289(2.1)
		1977	53(1.2)	290(2.4)*	47(1.2)	293(1.8)
Much of what you learn in science classes will be useful in the future.	13	1992	72(1.0)	260(1.4)	28(1.0)	255(2.1)
		1977	74(1.2)	251(2.1)*	26(1.2)	255(2.8)
	17	1992	68(1.1)	298(2.1)	32(1.1)	284(2.6)
		1977	65(1.3)	292(2.0)*	35(1.3)	290(2.0)
Science should be required in school.	13	1992	73(1.2)	260(1.3)	27(1.2)	255(1.9)
		1977	70(1.2)	252(2.1)*	30(1.2)	252(2.5)
	17	1992	76(1.0)	298(2.4)	24(1.0)	278(2.5)
		1977	62(1.1)*	292(2.0)*	38(1.1)*	291(2.4)*

* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Table 3.4 shows trends between 1977 and 1992 in perceived application of science at ages 13 and 17. The percentage of 13-year-old students who perceived that the application of science could help society increased for all questions except for the one concerned with preventing world starvation, where a significant decrease was seen. Significant increases were also seen for 17-year-old students, with two exceptions. Between 1977 and 1992, the percentage of 17-year-olds believing that the application of science could prevent world starvation decreased significantly, from 50 percent to 29 percent. There was no change in the 17-year-olds' perception that science can help find cures for diseases.

The average proficiency of students at ages 13 and 17 who perceived that the application of science could help society increased significantly between 1977 and 1992, with one exception. The proficiency level of 17-year-olds who perceived that the application of science could control weather remained fairly constant between 1977 and 1992.

Table 3.4

Trends in Perceived Applications of Science at Ages 13 and 17, 1977 to 1992

		PERCENT RESPONDING "VERY MUCH"			
How much do you think that the application of science can help . . .	**Year**	**Age 13**		**Age 17**	
Prevent world starvation?	1992	20(0.7)	261(2.8)	29(1.2)	308(2.9)
	1977	32(1.5)*	251(2.7)*	50(1.2)*	298(1.9)*
Save us from an energy shortage?	1992	68(1.3)	265(1.5)	77(0.9)	303(1.7)
	1977	54(1.7)*	256(2.4)*	70(1.0)*	295(1.7)*
Find cures for diseases?	1992	75(1.1)	262(1.4)	87(0.9)	300(1.6)
	1977	70(1.5)*	253(2.3)*	85(0.8)	292(1.6)*
Control weather?	1992	20(1.2)	262(1.9)	20(0.7)	300(3.0)
	1977	15(0.9)*	246(4.0)*	16(0.8)*	296(2.7)
Prevent birth defects?	1992	37(1.3)	268(1.9)	52(0.9)	306(2.0)
	1977	23(1.2)*	257(3.1)*	44(1.2)*	297(1.9)*
Save our natural resources?	1992	62(1.3)	261(1.6)	64(1.3)	301(1.7)
	1977	46(1.1)*	252(2.5)*	48(1.2)*	293(2.0)*
Reduce air and water pollution?	1992	58(1.2)	262(1.5)	64(1.3)	303(1.9)
	1977	44(1.2)*	253(2.4)*	54(1.2)*	296(1.8)*

* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Science Trend Assessment

Summary

Between 1977 and 1992, there were significant increases in the percentages of 9-year-old students who had used a thermometer, microscope, and calculator. However, no change occurred in the percentage who had used a scale to weigh things or performed experiments with batteries and bulbs. A significant decrease was seen in the percentage of 9-year-olds reporting that they had experimented with living plants.

From 1986 to 1992, the percentage of 17-year-olds taking biology and chemistry increased significantly. In addition, more Black and White students and more males and females reported having studied biology, while more White students and females reported chemistry study. There was no significant change in the percentage of the total student population taking physics, but the percentages of White students and females taking it increased significantly. White and female students who reported taking general science, biology, or chemistry showed a significant increase in average proficiency between 1986 and 1992. Females who reported taking physics and males who reported taking chemistry also showed a significant increase in average proficiency in the same time frame. Black and Hispanic students who reported taking general science, biology, chemistry, or physics showed no significant increase in average proficiency.

In both 1977 and 1992, no relationship was seen between average proficiency and the responses of 13-year-old and 17-year-old students to statements concerning attitudes about the value of science. From 1977 to 1992, there was a significant decrease in the number of 13-year-old students who believed that what was learned in science class would be useful in everyday life. The percentage of 17-year-olds who believed that science should be required in school increased significantly.

In 1992, greater percentages of 13- and 17-year-old students believed that science could help solve a number of global problems with two exceptions. NAEP data showed diminishing student confidence for both age groups in the impact that science might have in preventing world starvation. Meanwhile, the percentage of 17-year-olds believing that the application of science can help find cures for diseases remained fairly constant. The average proficiency of 13- and 17-year-old students who believed that science could help solve a number of global problems showed a significant increase from 1977 to 1992. The one exception was that the proficiency of 17-year-olds who believed that science could help control weather remained fairly constant between 1977 and 1992.

Part II

Trends in Mathematics Achievement from 1973 to 1992

Introduction

The public is accustomed to a variety of social and economic indicators, including rises and dips in the Dow-Jones industrial average. For mathematics educators and policymakers, the long-term trends observed in student proficiency in mathematics serve a similar function. The 1992 NAEP mathematics assessment to monitor long-term trends was the sixth of its kind, with previous assessments conducted in the 1972-73, 1977-78, 1982-83, 1985-86, and 1989-90 school years. Each of these mathematics assessments, which subsequently will be referred to by the last half of the school year in which they occurred, involved nationally representative samples of 9-year-olds, 13-year-olds, and 17-year-olds attending school.

Unlike the NAEP assessments conducted in 1990 and 1992 to collect national data for grades 4, 8, and 12[16] and state data for grades 4 and 8, the long-term trend assessments replicate NAEP's initial data-gathering process of sampling students from across the country at ages 9, 13, and 17. Another difference is that the long-term trend assessments employ a different set of items, reflecting a more conservative view of the school curriculum than the assessments newly developed for the 1990s.[17] The newly developed mathematics assessments provide a view of students' proficiency on questions assessing more contemporary goals in mathematics education, such as those based on problem-solving tasks and involving calculators and manipulatives.[18] They also included an extensive set of background questions asked of students, their teachers, and school administrators. Mathematics assessments currently scheduled for 1996 continue these directions through an updated NAEP Mathematics Framework developed under the auspices of NAGB, and increased emphasis on performance-based problem-solving tasks.[19]

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[16] Mullis, I. V.S., Dossey, J. A., Owen, E. H., & Phillips, G. W., *NAEP 1992 Mathematics Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

However, because the new trend series into the 21st century has just begun, so far only providing short-term changes between 1990 and 1992, it is also important to maintain links to past performance. The mathematics content included in the long-term trend assessments provides an important foundation for the more advanced skills called for as part of the mathematics reform movement and being covered in the new assessments.

Because the content of the new compared to the long-term trend assessments differs, and because the populations assessed differ as well (grades versus ages), the results of the two are not directly comparable. The trend results reported differ somewhat from those results showing changes between 1990 and 1992 reported in the *NAEP 1992 Mathematics Report Card for the Nation and the States*. Both data sets, however, showed increased mathematics achievement for students during recent assessments. The short-term gains noted for fourth, eighth, and twelfth graders in the *NAEP 1992 Mathematics Report Card* are consistent with positive trends across the past decade from 1982 to 1992 at all three ages.

The long-term trends across the past 20 years or so provide important information about the progress being made in raising students' proficiency levels in an assessment that focuses more heavily on numbers and operations, procedural skills, and basic problem solving. Such progress is an important component in achieving the broad problem-solving and application skills called for in *The Curriculum and Evaluation Standards for School Mathematics* developed by the National Council of Teachers of Mathematics.[20]

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[17] *Math Objectives, 1985-86 Assessment* (Princeton, NJ: Educational Testing Service).

[18] Dossey, J. A., Mullis, I. V.S., & Jones, C. O., *Can Students Do Mathematical Problem Solving?* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Dossey, J. A., Mullis, I. V.S., & Gorman, S., *How School Mathematics Functions* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1994).

Mullis, I. V.S., Jenkins, F., & Johnson, E. G., *Effective Schools in Mathematics* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1994).

[19] *1994 National Assessment of Educational Progress, Mathematics Assessment Framework* (Washington, DC: National Assessment Governing Board, 1992).

The long-term trend assessment materials included a range of tasks, from those requiring knowledge of number facts, use of simple measurement instruments, and ability to read charts and graphs, to those involving multi-step problem solving and reasoning, fractions, percents, geometric figures, exponents, square roots, algebraic expressions, linear equations, functions, and coordinate systems. To measure performance trends, subsets of the same questions have been included in several successive assessments. Some questions have been included in all six assessments.

The mathematics education community has been very active during recent years, working diligently toward curricular and instructional reforms. *The NCTM Standards* were followed by the publication of *Professional Standards for Teaching Mathematics*.[21] The Mathematics Sciences and Education Board (MSEB) also has produced a number of publications relevant to reform efforts, including *Everybody Counts: A Report to the Nation on the Future of Mathematics Education* and *Moving Beyond Myths: Revitalizing Undergraduate Mathematics*.[22] Most recently, the MSEB has turned to matters of assessment in mathematics, publishing *Measuring Up* and *Measuring What Counts*.[23]

The results from the six NAEP mathematics trend assessments provide a wide range of information about how students' proficiency has changed during the 19-year period from 1973 to 1992. The scale, which ranges from 0 to 500, provides a common metric for comparing average performance across assessments, age groups, and demographic subpopulations. NAEP also has characterized student performance at five levels on the scale: Level 150 — Simple Arithmetic Facts, Level 200 — Beginning Skills and Understandings, Level 250 — Basic Operations and Beginning Problem Solving, Level 300 — Moderately Complex Procedures and Reasoning, and Level 350 — Multi-Step Problem Solving and Algebra.

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[20] *Curriculum and Evaluation Standards for School Mathematics* (Reston, VA: National Council of Teachers of Mathematics, 1989).

[21] *Professional Standards for Teaching Mathematics* (Reston, VA: National Council of Teachers of Mathematics, 1991).

[22] *Everybody Counts: A Report to the Nation on the Future of Mathematics Education*, Lynn Steen, editor (Washington, DC: The Mathematical Sciences Education Board and National Research Council, National Academy Press, 1989).

Moving Beyond Myths: Revitalizing Undergraduate Mathematics (Washington, DC: Board on Mathematical Sciences, The Mathematical Sciences Education Board, and National Research Council, National Academy Press, 1991).

[23] *Measuring Up: Prototypes for Mathematics Assessment* (Washington, DC: Mathematical Sciences Education Board and National Research Council, National Academy Press, 1993).

Measuring What Counts: A Conceptual Guide for Mathematics Assessment (Washington, DC: Mathematical Sciences Education Board and National Research Council, National Academy Press, 1993).

Because the statistics presented in this report are estimates of group and subgroup performance based on samples of students, it is helpful to have measures of the degree of uncertainty associated with each estimate. Thus, the percentages of students and their proficiencies provided in this report are accompanied by standard errors shown in parentheses. Unless otherwise noted, all differences discussed in this report are statistically significant at the .05 level of significance. This means that the observed differences are probably characteristic of the population and are unlikely to be due to chance or to sampling variability. The report denotes significant trend differences with an asterisk or dagger (see Procedural Appendix for details).

4

Trends in Mathematics Proficiency for the Nation and Demographic Subpopulations

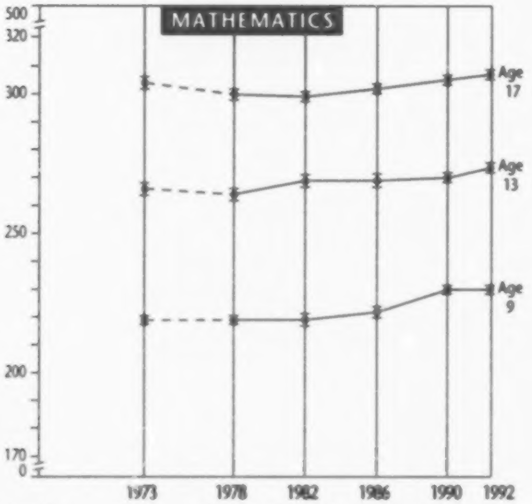
National Trends in Mathematics Proficiency from 1973 to 1992

The line graphs in Figure 4.1 depict national trends in average mathematics proficiency for 9-, 13-, and 17-year-olds across the 19-year period from 1973 to 1992. With the exception of the 1973 data, the results are based on recent analyses to provide scaled results for the trend assessments. The results for the 1973 assessment (see dotted line) were extrapolated from previous NAEP analyses. (Please refer to the Procedural Appendix for details about the scaling methodology and for information about drawing inferences from the trend analyses.)

Although at all three ages, performance in 1992 was not statistically different from 1990, significant increases were noted during the past decade. At ages 9 and 13, these increases resulted in significantly higher average proficiency in 1992 than in the baseline assessment year of 1973. Performance for 17-year-olds returned to the level seen in the original trend assessment, after declining between 1973 and 1982.

FIGURE 4.1

Trends in Average Mathematics Proficiency for the Nation, 1973 to 1992



	1973	1978	1982	1986	1990	1992
Age 17	304(1.1)	300(1.0)*	298(0.9)*†	302(0.9)*	305(0.9)	307(0.9)
Age 13	266(1.1)*	264(1.1)*	269(1.1)*	269(1.2)*	270(0.9)†	273(0.9)†
Age 9	219(0.8)*	219(0.8)*	219(1.1)*	222(1.0)*	230(0.8)†	230(0.8)†

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1973, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Nine-Year-Olds. At age 9, average performance remained at a constant level between 1973 and 1982, and then increased across the past decade (although a leveling off was observed between 1990 and 1992). The increase resulted in a significant improvement across the 19-year period from 1973 to 1992.

Thirteen-Year-Olds. At age 13, average performance was higher in 1992 than in 1973, and even though the apparent increase between 1990 and 1992 was not statistically significant, performance in 1992 also was significantly higher than in 1986.

Seventeen-Year-Olds. At age 17, average performance decreased between 1973 and 1982, but has increased steadily since then. Although increases from assessment to assessment during the 1980s were not statistically significant, average performance in 1992 was higher than in 1982. This upturn served to return performance at age 17 to the original 1973 level, if not higher.

Trend analyses conducted across the six mathematics assessments found significant linear trends at all three ages (see Data Appendix). Given the actual values for average mathematics performance, these findings support the view that improvement is indeed taking place in the long-term, as measured by the NAEP trend assessments.

Trends in Mathematics Proficiency from 1978 to 1992 by Quartiles

Table 4.1 contains trends in average proficiency between 1978 and 1992 for students in the lower quartile, the middle two quartiles, and the upper quartile. Results by quartile were not available for the 1973 assessment.

The results illustrate the tremendous range of performance within each age in each assessment (also see percentiles in the Data Appendix for mathematics). They also provide information about whether the gains in average mathematics proficiency noted for the nation are occurring for students across the performance distribution. The objectives associated with our country's national education goals state that the academic performance of elementary and secondary students needs to increase significantly in every quartile.[24]

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[24] *The National Education Goals Report: Building a Nation of Learners* (Report of the National Education Goals Panel, U.S. Government Printing Office, 1993).

At all three ages, students in the upper, middle, and lower quartiles had significantly increased performance between 1978 and 1992. At age 9, after essentially no change between 1978 and 1982, students in all quartiles showed significant improvement across the past decade from 1982 to 1992 (approximately 10 to 12 scale points for each portion of the distribution—high, middle, and low). The leveling off in national improvement gains at age 9 between 1990 and 1992 was observed for students across the range of the distribution.

For 13- and 17-year-olds, the improvement since 1978 was most marked for students in the lower quartile, although significant gains also were noted for students in the middle and upper quartiles. Between 1990 and 1992, significant improvement was noted for the middle quartiles at ages 13 and 17, but not for either the upper or lower quartiles. Still, in 1992, average proficiency for 17-year-olds in the middle two quartiles was about the same as that of 13-year-olds in the top quartile.

Table 4.1

Trends in Average Mathematics Proficiency by Quartiles, 1978 to 1992

		AVERAGE PROFICIENCY		
Quartile	**Year**	**Age 9**	**Age 13**	**Age 17**
Upper Quartile	1992	266(0.8)†	309(0.6)†	342(0.7)†
	1990	266(0.8)†	306(0.6)	341(0.8)†
	1986	259(0.7)*†	306(0.7)*	340(0.7)
	1982	256(0.6)*	306(0.7)*	336(0.6)*†
	1978	256(0.8)*	305(0.6)*	338(0.4)*
Middle Two Quartiles	1992	232(0.5)†	274(0.4)†	308(0.4)†
	1990	231(0.4)†	271(0.4)*†	305(0.5)*†
	1986	223(0.5)*†	269(0.5)*†	301(0.5)*
	1982	221(0.5)*	269(0.3)*†	299(0.3)*†
	1978	220(0.5)*	266(0.4)*	302(0.3)*
Lower Quartile	1992	190(0.8)†	236(1.2)†	270(0.9)†
	1990	190(1.0)†	234(0.8)†	268(0.9)†
	1986	181(0.7)*†	233(0.7)†	265(0.9)*†
	1982	178(0.8)*	230(0.8)*†	260(0.7)*
	1978	178(0.6)*	221(0.7)*	260(0.5)*

*Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

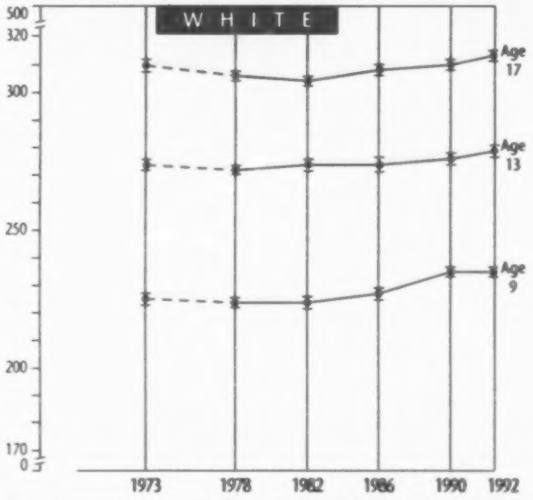
SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Mathematics Proficiency from 1973 to 1992 by Race/Ethnicity

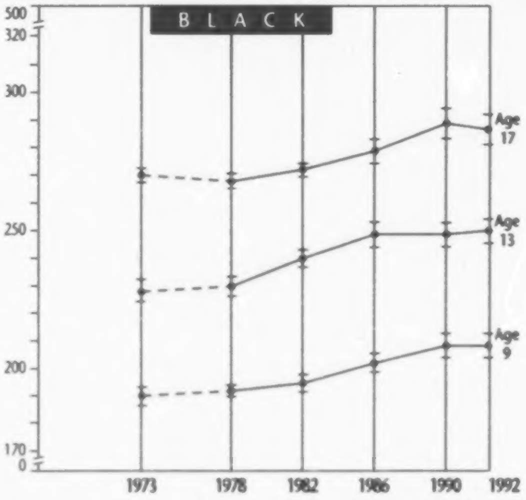
Figure 4.2 portrays trends in mathematics proficiency for White, Black, and Hispanic students. Since 1973, 9-year-olds in all three racial/ethnic groups have shown significant improvement in average mathematics proficiency. Even though much of this improvement occurred during the past decade (significant increases between 1982 and 1992 for all three groups), there was no change in average proficiency between 1990 and 1992 for White, Black, or Hispanic 9-year-olds.

FIGURE 4.2

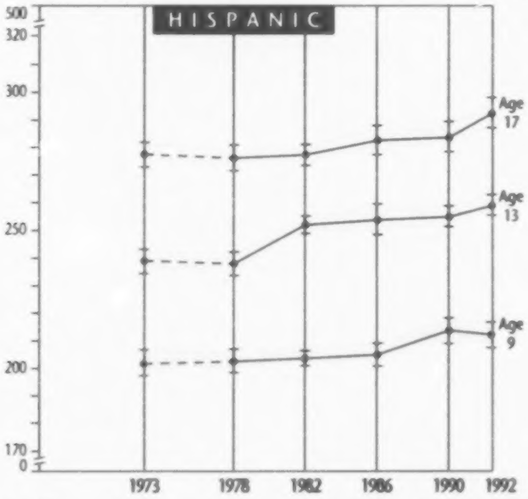
Trends in Average Mathematics Proficiency by Race/Ethnicity, 1973 to 1992



	1973	1978	1982	1986	1990	1992
Age 17	310(1.1) —	306(0.9)*† 83(1.3)*	304(0.9)*† 81(2.0)*	308(1.0)* 78(0.5)*†	310(1.0) 73(0.5)†	312(0.8) 75(0.5)†
Age 13	274(0.9)* —	272(0.8)* 80(1.7)*	274(1.0)* 79(2.1)	274(1.3)* 77(1.0)	276(1.1) 73(0.7)†	279(0.9)† 74(0.5)†
Age 9	225(1.0)* —	224(0.9)* 79(1.4)	224(1.1)* 79(2.5)	227(1.1)* 76(1.1)	235(0.8)† 74(1.1)†	235(0.8)† 75(0.9)



	1973	1978	1982	1986	1990	1992
Age 17	270(1.3)* —	268(1.3)* 12(1.1)*	272(1.2)* 12(1.7)	279(2.1)† 14(0.3)	288(2.8)† 16(0.3)†	286(2.2)† 15(0.3)†
Age 13	228(1.9)* —	230(1.9)* 13(1.5)	240(1.6)*† 14(1.8)	249(2.3)† 14(0.9)	249(2.3)† 16(0.3)	250(1.9)† 16(0.3)
Age 9	190(1.8)* —	192(1.1)* 14(1.4)	195(1.6)* 14(2.0)	202(1.6)† 15(0.5)	208(2.2)† 16(0.7)	208(2.0)† 16(0.4)



	1973	1978	1982	1986	1990	1992
Age 17	277(2.2)* —	276(2.3)* 4(0.5)*	277(1.8)* 5(1.0)	283(2.9) 6(0.3)*	284(2.9) 7(0.4)†	292(2.6)† 7(0.5)†
Age 13	239(2.2)* —	238(2.0)* 6(0.9)	252(1.7)*† 5(1.2)	254(2.9)† 7(1.1)	255(1.8)† 7(0.5)	259(1.8)† 7(0.5)
Age 9	202(2.4)* —	203(2.2)* 5(0.7)	204(1.3)* 5(1.1)	205(2.1) 6(1.1)	214(2.1)† 6(0.6)	212(2.3)† 6(0.8)

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992 , where alpha equals .05 per set of comparisons. † Statistically significant difference from 1973 (for proficiencies) or 1978 (for percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

At age 13, gains also were shown by students in all three racial/ethnic groups across the 19-year period. However, Black and Hispanic 13-year-olds improved by 22 and 20 scale-points, respectively, compared to a 5-point increase for White students. Since 1986, however, White students showed significant improvement, while performance by Black and Hispanic students has remained comparatively constant across the same period.

At age 17, the performance of White students essentially declined for a decade (from 1973 to 1982) and then improved for a decade (from 1982 to 1992), regaining the original level. In comparison, Black and Hispanic 17-year-olds made significant gains since 1973, particularly between 1982 and 1992.

Despite the many signs of positive growth in mathematics proficiency, in 1992, large discrepancies remained between the achievement of White students and that of their Black or Hispanic agemates. Consistent with many publications (including *The NCTM Standards* and *Everybody Counts*) that emphasize school mathematics be delivered and accessible to *all* students, it is important to look at the relative rates of growth for students from different racial/ethnic groups as a sign of moving to achieve the goals of equal access and opportunity. If not all students are contributing in equal measure to the growth, we are not achieving the goal of "mathematics for all."

At ages 9 and 13, the differences in average proficiency between White and Black students have been decreasing, although the data across the years show that there was a substantial narrowing until 1986, and no further progress since that time (see Figure 2 in Executive Summary). At age 17, the same pattern is evident — narrowing, but then perhaps even a slight (nonsignificant) widening of the performance gap since 1990.

The gaps between White and Hispanic students have remained somewhat constant at age 9 (see Figure 3 in Executive Summary). Although the gaps have narrowed at ages 13 and 17 between 1973 and 1992, progress has been stalled since 1982 for the 13-year-olds. For the 17-year-olds, trends toward closing performance differences became significant in 1992, reflecting the considerable jump in performance by the Hispanic students in the most recent assessment.

Trends in Mathematics Proficiency from 1973 to 1992 by Gender

Figure 4.3 depicts trends in average mathematics proficiency by gender. At age 9, males and females improved significantly between 1973 and 1992, but a plateau in improvement for the nation between 1990 and 1992 was observed for both genders. Nine-year-old males and females had similar average proficiency in 1992. The slight difference favoring females from 1973 to 1982 has gradually shifted, so that in 1992 the direction favored males (see Figure 4 in the Executive Summary).

Male and female students have had similar average proficiency across the mathematics assessments at age 13. For 13-year-olds, the shift from female to male advantage was not statistically significant. Both genders showed significant improvement between 1973 and 1992.

At age 17, the average performance of males declined significantly during the 1970s and then improved significantly during the 1980s, returning essentially to the initial level. The trend results for females show the same pattern, although in 1992 males had higher average achievement than females. Although smaller in magnitude than many of the subgroup differences found in the trend data, this 5-point gender gap was statistically significant and has persisted across assessments. Consistent with research showing the gender difference in favor of males is decreasing,[25] the performance gap between the genders for 17-year-olds appeared to narrow slightly, but not significantly, between 1973 and 1992.

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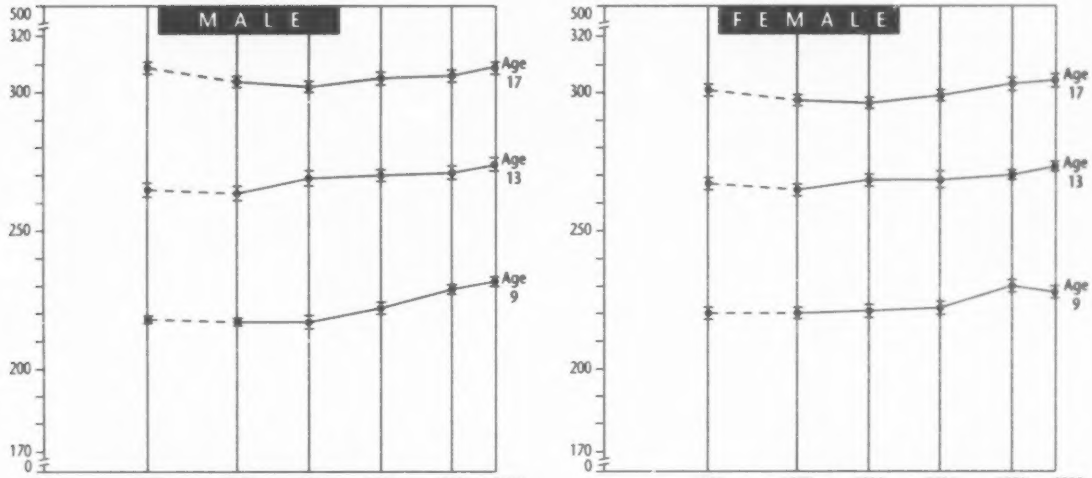
[25] Friedman, L., "Mathematics and the Gender Gap: A Meta-Analysis of Recent Studies in Sex Differences in Mathematical Tasks," *Review of Educational Research*, Summer 1989, Vol. 59 (2).

FIGURE 4.3

Trends in Average Mathematics Proficiency by Gender, 1973 to 1992



MALE

	1973	1978	1982	1986	1990	1992
Age 17	309(1.2) —	304(1.0)*† 49(0.5)	302(1.0)*† 49(0.6)	305(1.2)*† 49(1.2)	306(1.1) 49(0.9)	309(1.1) 51(1.2)
Age 13	265(1.3)* —	264(1.3)* 50(0.5)	269(1.4)* 50(0.4)	270(1.1)*† 50(0.9)	271(1.2)† 50(0.6)	274(1.1)† 50(0.8)
Age 9	218(0.7)* —	217(0.7)* 50(0.5)	217(1.2)* 49(0.6)	222(1.1)*† 50(0.6)	229(0.9)† 49(0.6)	231(1.0)† 49(0.6)

FEMALE

	1973	1978	1982	1986	1990	1992
Age 17	301(1.1) —	297(1.0)* 51(0.5)	296(1.0)*† 51(0.6)	299(1.0)* 51(1.2)	303(1.1) 51(0.9)	304(1.1) 49(1.2)
Age 13	267(1.1)* —	265(1.1)* 50(0.5)	268(1.1)* 50(0.4)	268(1.5) 50(0.9)	270(0.9) 50(0.6)	272(1.0)† 50(0.8)
Age 9	220(1.1)* —	220(1.0)* 50(0.5)	221(1.2)* 51(0.6)	222(1.2)* 50(0.6)	230(1.1)† 51(0.6)	228(1.0)† 51(0.6)

● 95 percent confidence interval. [– – –] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1973 (for proficiencies) or 1978 (for percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessmen.

Trends in Mathematics Proficiency from 1973 to 1992 by Region

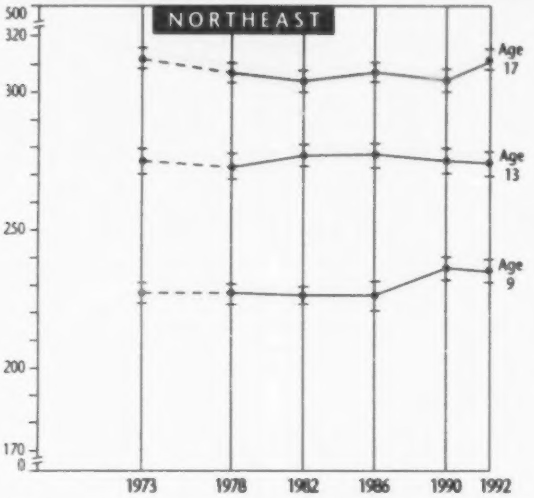
Figure 4.4 shows the trends for each of the four geographic regions defined in the NAEP assessments. At age 9, students made significant gains in all four regions between 1973 and 1992. In 1992, 9-year-olds in the Southeast trailed behind those in the other three regions of the country. As can be seen in the figure, the leveling off in national performance between 1990 and 1992 at this age occurred across the regions.

At age 13, students in the Southeast and West showed significant improvement between 1973 and 1992, while those in the Northeast and Central regions did not. In 1992, performance did not differ significantly across the regions at age 13.

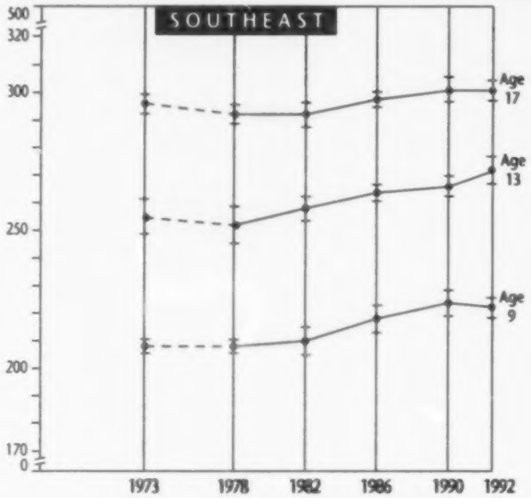
At age 17, the national pattern of declines in the 1970s, followed by recovery, was observed in the Northeast and West. For the Northeast, this recovery occurred primarily between 1990 and 1992. Gains were noted in the Southeast between 1982 and 1992, and in the Central region since 1986. Still, 17-year-olds' performance was not significantly higher in any of the four regions of the country in 1992 than it was in 1973. In 1992, performance in the Southeast and West was lower than in the Northeast and Central regions.

FIGURE 4.4

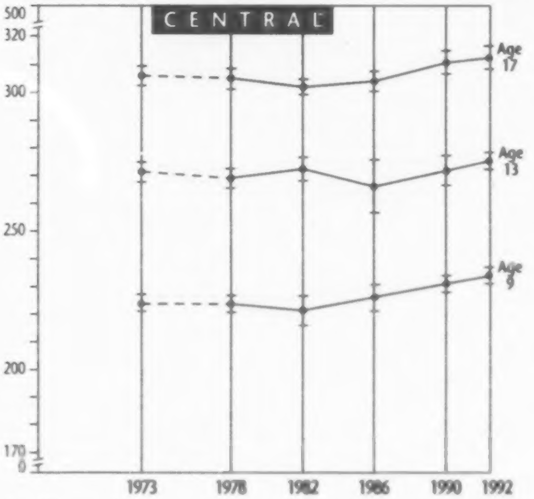
Trends in Average Mathematics Proficiency by Region, 1973 to 1992



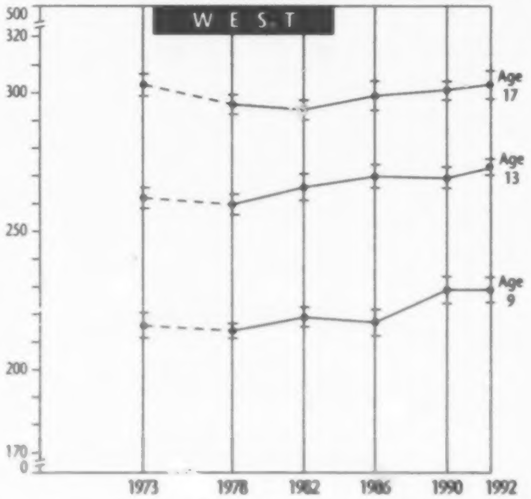
	1973	1978	1982	1986	1990	1992
Age 17	312(1.8) —	307(1.8) 23(2.0)	304(2.0)*† 24(2.8)	307(1.9) 24(0.8)	304(2.1)*† 22(1.0)	311(2.0) 22(0.9)
Age 13	275(2.4) —	273(2.4) 22(2.2)	277(2.0) 24(2.5)	277(2.2) 22(1.6)	275(2.3) 24(1.0)*	274(2.2) 21(0.8)
Age 9	227(1.9)* —	227(1.9)* 22(2.5)	226(1.8)* 21(2.7)	226(2.7)* 21(1.1)	236(2.1)† 23(0.9)	235(1.9)† 21(1.2)



	1973	1978	1982	1986	1990	1992
Age 17	296(1.8) —	292(1.7)* 22(2.1)	292(2.1)* 20(2.1)	297(1.4) 23(2.3)	301(2.3) 24(0.9)	301(1.9) 25(1.4)
Age 13	255(3.2)* —	253(3.3)* 23(2.0)	258(2.2)* 22(2.2)	264(1.4)* 25(5.8)	266(1.9)† 23(0.8)	271(2.5)† 24(1.6)
Age 9	208(1.3)* —	209(1.2)* 24(2.1)	210(2.5)* 24(2.7)	218(2.5)† 22(4.7)	224(2.4)† 24(0.9)	221(1.7)† 24(1.3)



	1973	1978	1982	1986	1990	1992
Age 17	306(1.8) —	305(1.9) 31(2.1)†	302(1.4)* 30(4.3)	304(1.9)* 28(2.2)	311(2.1) 26(0.9)	312(2.0) 25(1.0)†
Age 13	271(1.8) —	269(1.8)* 31(1.8)	273(2.1) 27(3.4)	266(4.5) 25(5.0)	272(2.4) 24(0.7)†	275(1.5) 27(1.0)
Age 9	224(1.5)* —	224(1.5)* 31(1.8)	221(2.7)* 28(3.8)	226(2.3)* 29(4.0)	231(1.3)† 24(0.6)*†	234(1.6)† 28(0.8)



	1973	1978	1982	1986	1990	1992
Age 17	303(2.0) —	296(1.8)*† 23(2.5)	294(1.9)*† 26(2.8)	299(2.7) 26(0.9)	302(1.5) 28(0.9)	303(2.3) 29(0.9)
Age 13	262(1.9)* —	260(1.9)* 24(2.2)	266(2.4) 27(2.3)	270(2.1)† 28(1.5)	269(1.6)† 29(0.9)	272(1.4)† 29(0.9)
Age 9	216(2.2)* —	214(1.3)* 23(2.0)	219(1.8)* 27(2.0)	217(2.4)* 28(1.6)	228(1.8)† 28(0.8)†	229(2.3)† 27(0.8)

● 95 percent confidence interval. [- - -] Extrapolated from previous NAEP analyses.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1973 (for proficiencies) or 1978 (for percentages), where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Mathematics Proficiency from 1978 to 1992 by Type of Community

Central to the question of educational opportunity is the type of community in which the child lives and is educated. Recent research has suggested that students from economically disadvantaged regions are less likely than their more advantaged peers to be exposed to demanding, comprehensive programs of instruction.[26] Table 4.2 presents trends in mathematics proficiency for students attending schools in three extreme community types — advantaged urban, disadvantaged urban, and extreme rural — as well as for students attending schools in other types of communities. These data are available for the assessments conducted from 1978 through 1992.

Across the various types of communities, students at all three ages generally showed improvement in average mathematics proficiency between 1978 and 1992. The exceptions were 9-year-olds attending schools in disadvantaged urban communities as well as 13- and 17-year-olds attending schools in advantaged urban communities.

In 1992, a substantial performance gap remained at each age between students in advantaged urban schools and their counterparts in disadvantaged urban schools. Students from extreme rural areas and those in other community types performed similarly, with their average proficiency between that of the two urban groups.

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[26] Oakes J., *Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science* (Santa Monica, CA: The Rand Corporation, 1990).

O'Day, J. A. & Smith, M. S., "Systemic Reform and Educational Opportunity." In S. Furhman, *Designing Coherent Policy: Improving the System* (San Francisco, CA: Jossey-Bass, 1993).

Table 4.2

Trends in Average Mathematics Proficiency by Type of Community, 1978 to 1992

Type of Community	Year	AGE 9		AGE 13		AGE 17	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Advantaged Urban	1992	11(2.1)	248(2.5)†	10(2.3)	292(2.5)	10(1.8)	317(3.5)
	1990	12(2.2)	244(1.8)†	10(1.9)	283(2.4)	10(1.7)	317(4.4)
	1986	17(3.1)	238(2.7)	12(3.5)	286(0.9)	13(2.5)	317(3.4)
	1982	10(2.3)	239(2.2)*	9(2.2)	291(1.5)†	10(1.5)	318(2.7)
	1978	12(2.2)	237(1.8)*	9(1.9)	285(1.6)	10(2.1)	320(2.0)
Disadvantaged Urban	1992	8(1.7)	208(2.3)	10(1.5)	250(2.9)†	12(1.8)	289(2.9)†
	1990	9(2.5)	214(4.6)†	11(2.0)	253(2.9)†	9(2.0)	285(4.2)†
	1986	6(1.6)	204(1.9)	9(4.3)	248(3.0)†	6(1.1)	273(2.0)*
	1982	7(1.5)	199(2.2)*	7(1.5)	246(4.4)	7(1.7)	278(2.4)*
	1978	7(1.2)	199(2.9)	7(1.2)	233(4.2)*	7(1.2)	272(1.7)*
Extreme Rural	1992	10(2.9)	225(2.0)†	9(2.2)	272(2.7)†	11(2.2)	305(1.8)†
	1990	8(1.6)	230(3.2)†	10(2.4)	265(3.7)	12(1.7)	304(1.8)†
	1986	5(2.2)	219(7.0)	6(3.5)	270(6.9)	3(1.2)*†	305(5.2)
	1982	11(3.5)	211(2.6)*	9(1.5)	258(1.9)*	8(1.5)	293(2.0)*
	1978	8(1.5)	212(2.9)*	10(1.9)	254(3.4)*	8(1.3)	295(1.5)*
Other	1992	72(3.9)	230(0.9)†	71(3.0)	274(0.9)†	68(3.3)	309(1.1)†
	1990	72(4.0)	229(0.9)†	70(3.4)	272(1.1)†	69(3.1)	306(1.1)†
	1986	72(4.1)	219(1.3)*	74(6.3)	269(1.1)*	78(3.5)	302(1.1)*
	1982	72(3.9)	219(0.9)*	75(3.0)	269(1.0)*	75(2.9)	298(1.0)*
	1978	73(2.5)	218(0.7)*	74(2.9)	266(1.2)*	75(3.0)	301(1.1)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages of students may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Mathematics Proficiency from 1978 to 1992 by Parents' Highest Level of Education

Table 4.3 presents trends in mathematics proficiency by the highest level of education that students reported for either parent. Between 1978 and 1992, 9-year-olds showed significant progress across all levels of parents' education, except for the category "graduated from high school." However, it should be noted that across assessments roughly one-third of the 9-year-olds reported that they did not know their parents' educational level.

At age 13, results were relatively stable across assessments, although a significant increase in proficiency between 1978 and 1992 was noted for 13-year-olds whose parents had not graduated from high school and for those whose parents had some education beyond high school but had not graduated from college.

For in-school 17-year-olds, average proficiency did not change significantly between 1978 and 1992 for any of the parental education categories. In 1992, at all three ages, students whose parents' had some education after high school or had graduated from college had higher average proficiency than students reporting that their parents had less formal education. Also, at ages 13 and 17, students whose parents had graduated from high school had higher average proficiency than students whose parents did not have their high school diploma (the difference at age 9 was not statistically significant).

Table 4.3

Trends in Average Mathematics Proficiency by Parents' Highest Level of Education, 1978 to 1992

		AGE 9		AGE 13		AGE 17	
Level of Education	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Graduated College	1992	42(1.2)†	236(1.0)†	44(1.3)†	283(1.0)	43(1.4)†	316(1.0)
	1990	40(1.1)†	238(1.3)†	41(1.2)†	280(1.0)	39(1.4)†	316(1.3)
	1986	38(1.1)†	231(1.1)*	38(2.0)*†	280(1.4)	37(1.2)*†	314(1.4)
	1982	30(1.5)*†	229(1.5)*	32(1.3)*†	282(1.5)	32(1.3)*	312(1.0)†
	1978	24(1.1)*	231(1.1)*	26(1.2)*	284(1.2)	32(1.1)*	317(1.0)
Some Education After High School	1992	8(0.4)	237(1.9)†	18(0.7)†	278(1.0)†	25(0.9)†	308(1.1)
	1990	7(0.4)	236(2.0)	17(0.6)†	277(1.0)†	24(0.9)†	308(1.0)
	1986	7(0.6)†	229(2.1)*	16(0.6)*	274(0.8)*	24(1.0)†	305(1.2)
	1982	9(0.4)*	225(2.1)*	14(0.4)*	275(0.9)	18(0.5)*	304(0.9)*
	1978	9(0.4)	230(1.7)*	14(0.4)*	273(1.2)*	16(0.4)*	305(0.9)
Graduated High School	1992	14(0.7)†	222(1.5)	23(0.9)†	263(1.2)	21(0.9)†	298(1.7)
	1990	16(0.7)*†	226(1.2)†	27(0.8)*†	263(1.2)	26(1.1)*†	294(0.9)
	1986	16(0.7)*†	218(1.6)	31(1.3)*	263(1.2)	28(1.1)*†	293(1.0)
	1982	25(0.8)*	218(1.1)	34(0.8)*	263(0.8)	33(0.8)*	293(0.8)
	1978	23(0.8)*	219(1.1)	33(0.8)*	263(1.0)	33(0.7)*	294(0.8)
Less Than High School	1992	4(0.3)†	217(2.2)†	6(0.5)†	256(1.0)†	8(0.6)†	286(2.3)
	1990	5(0.4)†	210(2.3)†	8(0.5)†	253(1.8)†	8(0.6)†	285(2.2)
	1986	4(0.4)†	201(2.5)*	8(1.1)†	252(2.3)†	8(0.4)†	279(2.3)
	1982	8(0.7)*	199(1.7)*	11(0.6)*	251(1.4)*†	14(0.9)*	279(1.0)
	1978	8(0.4)*	200(1.5)*	12(0.6)*	245(1.2)*	13(0.6)*	280(1.2)
I Don't Know	1992	33(0.8)	224(1.0)†	8(0.4)†	253(1.8)†	2(0.3)†	290(3.9)†
	1990	32(0.4)†	223(1.0)†	8(0.5)†	248(2.1)†	3(0.4)†	277(2.8)*
	1986	35(1.0)	214(1.4)*	8(0.4)†	247(2.3)†	3(0.3)†	281(2.4)
	1982	27(1.1)*†	213(1.5)*	9(0.8)†	252(3.2)†	4(0.3)*	272(1.8)*
	1978	37(1.5)	211(1.1)*	15(0.9)*	240(1.3)*	5(0.4)*	276(1.9)*

NOTE: Percentages of students do not total 100 percent because about one-third of the students at age 9 and smaller percentages at ages 13 and 17 reported that they did not know the education level of either parent.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Mathematics Proficiency from 1978 to 1992 by Type of School

An issue always of interest is the comparison in trends across time between public and private schools.[27] The 1992 data displayed in Table 4.4 for public and private (including Catholic) schools show that private school students had significantly higher average proficiency at all three ages. This advantage has been maintained since 1978 at age 9, as both groups of students showed significant increases across the assessments of approximately the same magnitude. At age 13, the significant improvement shown by public school students between 1978 and 1992 was not matched by students attending private schools.

The data for age 17 show increases for both public and private school students between 1978 and 1992, although the apparent improvement for private school students was not statistically significant. The significant difference in performance between the two groups of age 17 students in 1992 was quite similar to that found in 1978.

Table 4.4

Trends in Average Mathematics Proficiency by Type of School, 1978 to 1992

		AGE 9		AGE 13		AGE 17	
Type of School	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Public	1992	87(1.6)	228(0.9)†	88(1.9)	272(1.0)†	91(2.2)	305(0.9)†
	1990	89(2.1)	229(0.9)†	90(1.4)	269(1.0)†	93(1.8)	304(0.8)†
	1986	84(2.7)	220(1.2)*	96(1.8)*	269(1.2)†	96(1.4)	301(1.0)*
	1982	86(2.2)	217(1.1)*	89(1.3)	267(1.3)*†	92(1.6)	297(0.9)*
	1978	89(1.8)	217(0.8)*	91(1.6)	263(1.2)*	94(1.0)	300(1.0)*
Private	1992	13(1.6)	242(1.7)†	12(1.9)	283(2.5)	9(2.2)	320(3.0)
	1990	11(2.1)	238(2.3)†	10(1.4)	280(1.7)	7(1.8)	318(6.6)
	1986	16(2.7)	230(2.5)*	4(1.8)*	276(4.9)	4(1.4)	320(9.8)
	1982	14(2.2)	232(2.1)*	11(1.3)	281(2.1)	8(1.6)	311(1.7)*
	1978	11(1.8)	230(1.7)*	9(1.6)	279(1.4)	6(1.0)	314(3.2)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages of students may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

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[27] Raudenbush, S. and Bryk, A., "A Hierarchical Model for Studying School Effects" *Sociology of Education*, 59, 1-17, 1986.

Trends in Mathematics Proficiency from 1978 to 1992 by Modal Grade

As shown in Table 4.5, depicting the trends in mathematics achievement by modal grade, about 10 percent or so more of the students in each age group were below the modal grade in 1992 than in 1978. The percentage of students in third grade as compared to fourth grade increased from 26 to 38 percent, the percentage in seventh compared to eighth grade increased from 27 to 37 percent, and the percentage in tenth versus eleventh grade increased from 15 to 24 percent.

Table 4.5

Trends in Average Mathematics Proficiency by Modal Grade, 1978 to 1992

		AGE 9		AGE 13		AGE 17	
Modal Grade	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Below Modal Grade	1992	38(1.2)†	208(1.2)†	37(1.1)†	258(1.3)†	24(1.1)†	284(1.4)†
	1990	35(1.4)†	207(1.2)†	36(1.3)†	253(1.0)*†	22(1.0)†	282(1.7)†
	1986	34(1.7)†	198(1.0)*†	33(2.1)	251(1.1)*†	17(0.9)*	277(1.6)*
	1982	30(1.5)*	193(1.4)*	28(1.4)*	247(1.4)*†	16(1.0)*	274(1.6)*
	1978	26(0.9)*	191(1.1)*	27(1.1)*	240(1.4)*	15(0.6)*	273(1.1)*
Modal Grade	1992	62(1.2)†	242(0.7)†	62(1.0)†	282(0.9)†	70(1.0)†	313(0.8)†
	1990	65(1.4)†	242(1.0)†	63(1.4)†	280(0.9)†	70(1.0)†	311(0.8)†
	1986	66(1.7)†	234(1.0)*†	67(2.1)	278(1.0)*†	75(1.2)*	307(0.9)*
	1982	69(1.5)*	230(1.0)*	70(1.4)*	277(0.9)*	75(1.0)*	302(0.9)*
	1978	72(0.9)*	228(0.9)*	70(1.1)*	274(1.1)*	75(0.7)*	305(1.0)*
Above Modal Grade	1992	0(0.1)	—	0(0.1)	—	6(0.5)†	318(2.4)†
	1990	0(0.1)	—	0(0.2)	—	8(0.6)*	311(1.8)
	1986	0(0.1)	—	0(0.1)	—	8(0.7)	309(3.0)
	1982	0(0.1)	—	1(0.5)	304(6.3)	10(0.7)*	306(1.4)*
	1978	1(0.2)*	240(7.1)	1(0.2)	298(9.1)	10(0.5)*	309(1.0)*

NOTE: The modal grades are: grade 4 at age 9, grade 8 at age 13, and grade 11 at age 17.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages of students may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

There also was a modest decrease from 10 to 6 percent in the percentage of 17-year-olds in grade 12. These results are consistent with research showing trends toward increased retention and entrance age, in attempts to protect young children[28] as well as the practice of "redshirting" children in the early grades to provide additional maturity.[29]

Because the various retention and entrance age practices encompass diverse groups of students, many of whom will have had an additional year of schooling beyond that indicated by their grade, as well as being older for their grade, it is difficult to interpret these findings in relation to trends in average proficiency. Nevertheless, consistent with the overall national gains during the same time period at each of three ages, average mathematics proficiency improved significantly between 1978 and 1992 for both the students below modal grade and at the modal grade (as well as for those 17-year-olds above modal grade). As would be anticipated, however, students in the lower grades for their age had lower average proficiency than students in the higher grades for their age.

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[28] Bredekamp, S. & Shepard, L., "How Best to Protect Young Children from Inappropriate School Expectations, Practices, and Policies," *Young Children*, March 1989, Vol. 44(3).

[29] Frick, R., "Viewpoint 1. In Support of Academic Redshirting," *Young Children*, January 1986, Vol. 41(2).

Summary

The overall picture presented by the 1992 NAEP trend assessment data in mathematics is one of some optimism. At ages 9 and 13, significant improvement was observed between 1973 and 1992. For in-school 17-year-olds, performance declined between 1973 and 1982, but an upturn during the past decade has returned performance to the initial level. For all three ages, there were significant increases in average proficiency between 1982 and 1992, indicating improvement in the more computational aspects of mathematics that many citizens equate with "mathematics" itself.[30]

When our society is trying to see that *all* students have an opportunity to experience and prosper in mathematics, it also is somewhat reassuring that the trends indicate some continued closing of the gaps between historically advantaged and disadvantaged groups. Between 1978 and 1992, significant gains were noted across lower, middle, and upper quartiles at all three ages. For 13- and 17-year-olds, the improvements since 1978 were particularly noticeable for students in the lower quartile.

At both ages 9 and 13, White, Black, and Hispanic students showed significant improvement in average mathematics proficiency between 1973 and 1992. So, too, did Black and Hispanic students at age 17. Although the large discrepancies in average performance between White and Black students have narrowed since 1973, this trend has leveled off in recent assessments. The same pattern was evident at all three ages. Between White and Hispanic students, average performance differences remained constant at age 9, but narrowed at ages 13 and 17.

At ages 9 and 13, males and females have had similar average proficiency from assessment to assessment, with both genders showing significant improvement between 1973 and 1992. Yet, the slight female advantage in early assessments appears to have shifted direction to a slight male advantage in 1992. This trend was significant at age 9, but not at age 13. At age 17, males had higher average achievement in 1992. The gender gap narrowed, but not significantly, between 1973 and 1992.

Regional trends tended to parallel those for the nation. At age 9, the Southeast had the lowest average proficiency in 1992. At age 13, however, there were no significant differences in regional performance. At age 17, the Southeast and West trailed the Northeast and Central regions.

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[30] For performance results on a broader set of objectives for mathematics education than covered by the trend assessments dating back to the 1970s and '80s, please see Mullis, I. V.S., Dossey J. A., Owen, E. H., & Phillips, G. W., *NAEP 1992 Mathematics Report Card for the Nation and the States*. (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Between 1978 and 1992, students attending public schools showed significant improvement at all three ages. These gains were not matched by the older private school students, especially at age 13. In 1992, however, private school students maintained their advantage compared to public school students at all three ages assessed.

5

Trends in Levels of Mathematics Proficiency for the Nation and Demographic Subgroups

National Trends in Levels of Mathematics Proficiency from 1978 to 1992

To provide a context for interpreting the overall mathematics trend results presented in Chapter Four, the NAEP mathematics scale was "anchored" at five levels — 150, 200, 250, 300, and 350.[31] NAEP developed descriptions of performance at these various levels by using the assessment results to delineate sets of questions that students at one level were more likely to answer correctly than were students at the next lower level. The five sets of "anchor" questions were studied by mathematics educators, who carefully considered and articulated the types of knowledge, skills, and reasoning abilities demonstrated by correct responses. The descriptions summarizing performance at the five levels are in Figure 5.1.

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[31] In theory, proficiency levels above 350 or below 150 could have been defined; however, so few students in the assessment performed at the extreme ends of the scale that it was not practical to do so.

Figure 5.1 - Levels of Mathematics Proficiency

Level 350: Multi-Step Problem Solving and Algebra

Students at this level can apply a range of reasoning skills to solve multi-step problems. They can solve routine problems involving fractions and percents, recognize properties of basic geometric figures, and work with exponents and square roots. They can solve a variety of two-step problems using variables, identify equivalent algebraic expressions, and solve linear equations and inequalities. They are developing an understanding of functions and coordinate systems.

Level 300: Moderately Complex Procedures and Reasoning

Students at this level are developing an understanding of number systems. They can compute with decimals, simple fractions, and commonly encountered percents. They can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. These students are also able to interpret simple inequalities, evaluate formulas, and solve simple linear equations. They can find averages, make decisions on information drawn from graphs, and use logical reasoning to solve problems. They are developing the skills to operate with signed numbers, exponents, and square roots.

Level 250: Numerical Operations and Beginning Problem Solving

Students at this level have an initial understanding of the four basic operations. They are able to apply whole number addition and subtraction skills to one-step word problems and money situations. In multiplication, they can find the product of a two-digit and a one-digit number. They can also compare information from graphs and charts, and are developing an ability to analyze simple logical relations.

Level 200: Beginning Skills and Understandings

Students at this level have considerable understanding of two-digit numbers. They can add two-digit numbers, but are still developing an ability to regroup in subtraction. They know some basic multiplication and division facts, recognize relations among coins, can read information from charts and graphs, and use simple measurement instruments. They are developing some reasoning skills.

Level 150: Simple Arithmetic Facts

Students at this level know some basic addition and subtraction facts, and most can add two-digit numbers without regrouping. They recognize simple situations in which addition and subtraction apply. They also are developing rudimentary classification skills.

The percentages of students at ages 9, 13, and 17 reaching the various scale levels in each of the mathematics trend assessments are shown in Table 5.1. Because these analyses were not possible for data collected for the 1973 mathematics assessment, the data are presented for the 1978 through the 1992 assessments.

Table 5.1

Trends in Percentages of Students At or Above Five Mathematics Proficiency Levels, 1978 to 1992

		ASSESSMENT YEARS				
Proficiency Levels	**Age**	**1978**	**1982**	**1986**	**1990**	**1992**
Level 350						
Multi-Step Problem	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Solving and Algebra	13	1(0.2)	0(0.1)	0(0.1)†	0(0.1)†	0(0.2)
	17	7(0.4)	6(0.4)†	6(0.5)	7(0.6)	7(0.6)
Level 300						
Moderately Complex	9	1(0.1)	1(0.1)	1(0.2)	1(0.3)	1(0.3)
Procedures and	13	18(0.7)	17(0.9)	16(1.0)	17(1.0)	19(1.0)
Reasoning	17	52(1.1)*	48(1.3)*	52(1.4)*	56(1.4)†	59(1.3)†
Level 250						
Numerical Operations	9	20(0.7)*	19(1.0)*	21(0.9)*	28(0.9)†	28(0.9)†
and Beginning	13	65(1.2)*	71(1.2)*†	73(1.6)†	75(1.0)†	78(1.1)†
Problem Solving	17	92(0.5)*	93(0.5)*	96(0.5)†	96(0.5)†	97(0.5)†
Level 200						
Beginning Skills and	9	70(0.9)*	71(1.2)*	74(1.2)*	82(1.0)†	81(0.8)†
Understandings	13	95(0.5)*	98(0.4)†	99(0.2)†	98(0.2)†	99(0.3)†
	17	100(0.1)*	100(0.0)	100(0.1)	100(0.1)	100(0.0)
Level 150						
Simple Arithmetic	9	97(0.3)*	97(0.3)*	98(0.3)*†	99(0.2)†	99(0.2)†
Facts	13	100(0.1)	100(0.0)	100(0.0)	100(0.0)	100(0.0)
	17	100(0.0)	100(0.0)	100(0.0)	100(0.0)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentage of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 percent or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

More 9-year-old students reached Levels 150, 200, and 250 in 1992 than did in 1978. The growth was particularly noteworthy at Levels 200 and 250, typified by questions measuring beginning skills and understandings as well as numerical operations and beginning problem solving, respectively. In 1992, 81 percent of the 9-year-olds performed at or above Level 200 compared to 70 percent in 1978. Thirteen-year-olds also showed progress at Levels 200 and 250. In 1978, 65 percent of the 13-year-olds reached Level 250, but this percentage then rose considerably, to 78 percent in 1992. In contrast, performance has remained relatively constant across the assessments at Level 300. In 1992, 19 percent of the 13-year-olds reached this level. Seventeen-year-olds attending school had gains at Levels 250 and 300, with the percentage who reached Level 300 increasing from 52 percent in 1978 to 59 percent in 1992. The 7 percent of 17-year-olds demonstrating success with multi-step problem solving and algebra (Level 350) has remained essentially the same in each of the assessments.

The overall picture painted by these shifts in percentages from one level to the next is one of continual, but gradual, improvement. It may be of concern, however, that unlike the middle and lower portions, no shifts occurred at the top end of the ranges.

Level 150: Simple Arithmetic Facts. In 1992, as in previous mathematics assessments, virtually all students in each of three age groups performed at or above Level 150.

Level 200: Beginning Skills and Understandings. Students performing at or above Level 200 demonstrated a greater range and depth of basic mathematical skills than did those who reached only Level 150, but were still developing a grasp of multiplication and division and reasoning ability beyond that required by simple numerical computation. Virtually all 13- and 17-year-olds and more than four-fifths of the 9-year-olds performed at or above Level 200 in the 1992 assessment. This represented improvements between 1978 and 1992 at ages 9 and 13.

Level 250: Numerical Operations and Problem Solving. Students performing at or above Level 250 had developed a surface understanding of the four basic operations, and were beginning to acquire more developed reasoning skills. At all three ages, increased percentages of students performed at or above Level 250. At age 9, the increases between 1978 and 1992 were from 20 to 28 percent performing at or above this level. At ages 13 and 17, the increases were from 65 to 78 percent and from 92 to 97 percent, respectively.

Level 300: Moderately Complex Procedures and Reasoning. Students performing at or above Level 300 demonstrated better numerical reasoning, and were able to draw from a wider range of mathematical areas, including algebra and geometry. At age 17, significantly more students performed at this level in 1992 than in 1978 — 59 compared to 52 percent. There was little or no change in performance at ages 9 and 13. The knowledge and problem-solving skills required to answer questions at Level 300 are probably beyond the curriculum encountered by most elementary students and therefore the small percentages of 9-year-olds reaching this level (about 1 percent in each assessment) might be anticipated. However, only 19 percent of the 13-year-olds (for the most part seventh and eighth graders) demonstrated problem-solving skills at this level, and there has been no change across assessments since 1978, which seems surprising in light of the numerous efforts for reform in school mathematics. Problem solving has been the beacon light for reform in school mathematics since NCTM published *An Agenda for Action* in 1980.

Level 350: Multi-step Problem Solving and Algebra. Similar to the stagnation at Level 300 observed at age 13, 17-year-olds have shown no improvement at Level 350. Only 7 percent of the 17-year-olds attending school attained this level in 1992, and these results have remained essentially constant since 1978.

Trends in Levels of Mathematics Proficiency from 1978 to 1992 by Race/Ethnicity

Table 5.2 presents changes in the percentages of White, Black, and Hispanic students reaching various levels on the NAEP mathematics trend scale. Essentially all students at all three ages performed at or above Level 150 in the 1992 assessment and there was little if any variation across racial/ethnic groups. At age 9, this represented a substantial improvement since 1978 for Black students, with the percentage of these students who reached Level 150 rising from 88 to 97 percent.

Table 5.2

Trends in Percentages of Students At or Above Five Mathematics Proficiency Levels by Race/Ethnicity, 1978 to 1992

		ASSESSMENT YEARS					
		1978			1992		
Proficiency Levels	Age	White	Black	Hispanic	White	Black	Hispanic
Level 350							
Multi-Step Problem	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Solving and Algebra	13	1(0.2)*	0(0.1)	0(0.1)	0(0.2)	0(0.3)	0(0.1)
	17	8(0.5)	0(0.2)	1(0.6)	9(0.9)	1(0.7)	1(0.8)
Level 300							
Moderately Complex	9	1(0.2)	0(0.1)	0(0.5)	1(0.3)	0(0.1)	0(0.5)
Procedures and	13	21(0.7)	2(0.5)	4(1.0)	23(1.3)	4(0.7)	7(1.2)
Reasoning	17	58(1.1)*	17(1.6)*	23(2.7)*	66(1.4)	30(3.9)	39(4.9)
Level 250							
Numerical Operations	9	23(0.9)*	4(0.6)*	9(2.5)	32(1.0)	10(1.4)	12(2.5)
and Beginning	13	73(0.9)*	29(2.1)*	36(2.9)*	85(1.1)	51(2.7)	63(2.7)
Problem Solving	17	96(0.3)*	71(1.7)*	78(2.3)*	98(0.4)	90(2.5)	94(2.2)
Level 200							
Beginning Skills and	9	76(1.0)*	42(1.4)*	54(2.8)*	87(0.7)	60(2.8)	65(2.9)
Understandings	13	98(0.3)*	80(1.5)*	86(0.9)*	100(0.2)	95(1.4)	98(0.7)
	17	100(0.0)	99(0.3)*	99(0.4)	100(0.0)	100(0.1)	100(0.0)
Level 150							
Simple Arithmetic	9	98(0.2)*	88(1.0)*	93(1.2)	100(0.1)	97(1.1)	97(1.3)
Facts	13	100(0.0)	99(0.4)*	100(0.3)	100(0.0)	100(0.1)	100(0.0)
	17	100(0.0)	100(0.0)	100(0.0)	100(0.0)	100(0.0)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentage of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 percent or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Virtually all 17-year-olds have performed at or above Level 200 since the initial assessments. At ages 9 and 13, however, there have been significant improvements since 1978 for students in each of three racial/ethnic groups. At age 13, the gains were especially large for Black students (from 80 to 95 percent) and for Hispanic students (from 86 to 98 percent). At age 9, the increases were from 76 to 87 percent for White students, from 42 to 60 percent for Black students, and from 54 to 65 percent for Hispanic students. At age 13, the increases at this level served to close the performance gap among groups of students. However, large gaps still remained at age 9 between White students and their Black and Hispanic agemates.

At Level 250, White and Black students showed gains between 1978 and 1992 at all three ages. Hispanic students showed gains at ages 13 and 17. Almost all White 17-year-olds performed at or above Level 250 in both 1978 and 1992 (96 compared to 98 percent). At age 17, the percentage of Black students performing at or above this level increased from 71 to 90 percent, and the percentage of Hispanic students increased from 78 to 94 percent. At age 13, the percentage for White students rose from 73 to 85 percent, for Black students from 29 to 51 percent, and for Hispanic students from 36 to 63 percent. At age 9, the increases were from 23 to 32 percent for White students and from 4 to 10 percent for Black students, while performance did not change significantly for Hispanic students (9 to 12 percent). At Level 250, Black and Hispanic 17-year-olds have closed the performance gaps with their White agemates. For 13-year-olds, despite impressive gains by Black and Hispanic students to lessen the performance differences with White students, the gaps remained large. Substantial differences also remained at age 9, where relatively larger gains were made by White students, particularly with respect to Hispanic students.

At Level 300, 17-year-olds in all three racial/ethnic groups showed significant progress between 1978 and 1992. The increases were substantial for Black students (13 percent) and for Hispanic students (16 percent), and more modest for White students (8 percent). Still, in 1992, 66 percent of the White 17-year-olds reached this level of performance, compared to 30 percent of the Black students and 39 percent of the Hispanic students. At ages 9 and 13, there was essentially no change from the levels of performance in 1978. In 1992, very few 9-year-olds in any of the three racial/ethnic groups reached Level 300 (1 percent or fewer). At age 13, 23 percent of the White students reached Level 300, compared to 4 percent of the Black students and 7 percent of the Hispanic students.

At all three ages, for all three racial/ethnic groups, results at Level 350 remained essentially unchanged between 1978 and 1992. Virtually no 9-year-olds and very few 13-year-olds (fewer than 1 percent) attained Level 350 in either 1978 or 1992. The results at age 17 were also nearly identical between 1978 and 1992, with 9 percent of the White students and 1 percent of both the Black and Hispanic students reaching Level 350 in 1992.

Overall, the data for percentages of students reaching various levels on the NAEP mathematics trend scale showed considerable improvement between 1978 and 1992 for students of all three racial/ethnic groups. The increases for Black and Hispanic youth were particularly impressive for

9-year-olds at Level 200, for 13-year-olds at Levels 200 and 250, and for 17-year-olds at Levels 250 and 300. However, the performance gaps between White students and their Black and Hispanic counterparts remained substantial for Levels 200 and 250 at age 9, Levels 250 and 300 at age 13, and Levels 300 and 350 at age 17. Also, the paucity of 13-year-olds of any racial/ethnic background reaching Level 300, and especially of 17-year-olds reaching Level 350, still remained essentially unchanged since 1978.

Trends in Levels of Mathematics Proficiency from 1978 to 1992 by Gender

Table 5.3 shows the percentages of males and females attaining each of the five anchor levels in both 1978 and 1992. At all three ages, the performance of males and females has been remarkably similar across assessments. In general, comparable percentages performed at each of the scale levels in 1978, commensurate increases were shown by both genders since then, and in 1992 the percentages remained very similar. Exceptions were Level 300 for age 13 and Level 350 for age 17, where males outperformed females and no change in achievement was observed for either gender between 1978 and 1992.

Between 1978 and 1992, both male and female 9-year-olds showed increased performance at Levels 150, 200, and 250. There were improvements for 13-year-olds of both genders at Levels 200 and 250. At age 17, both male and female students had improved performance at Levels 250 and 300.

Table 5.3

Trends in Percentages of Students At or Above Five Mathematics Proficiency Levels by Gender, 1978 to 1992

		ASSESSMENT YEARS			
		1978		1992	
Proficiency Levels	**Age**	**Male**	**Female**	**Male**	**Female**
Level 350					
Multi-Step Problem	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Solving and Algebra	13	1(0.2)	1(0.2)	0(0.2)	0(0.3)
	17	10(0.6)	5(0.7)	9(0.7)	5(0.8)
Level 300					
Moderately Complex	9	1(0.2)	1(0.2)	1(0.3)	1(0.4)
Procedures and	13	18(0.9)	18(0.7)	21(1.1)	17(1.4)
Reasoning	17	55(1.2)*	48(1.3)*	60(1.8)	58(1.6)
Level 250					
Numerical Operations	9	19(0.6)*	20(1.0)*	29(1.2)	26(1.5)
and Beginning	13	64(1.3)*	66(1.2)*	78(1.6)	78(1.1)
Problem Solving	17	93(0.5)*	91(0.6)*	97(0.6)	96(0.8)
Level 200					
Beginning Skills and	9	69(1.0)*	72(1.1)*	82(1.0)	81(1.1)
Understandings	13	94(0.5)*	95(0.5)*	99(0.4)	99(0.2)
	17	100(0.1)	100(0.1)	100(0.0)	100(0.0)
Level 150					
Simple Arithmetic	9	96(0.5)*	97(0.3)*	99(0.3)	99(0.3)
Facts	13	100(0.1)	100(0.1)	100(0.0)	100(0.0)
	17	100(0.0)	100(0.0)	100(0.0)	100(0.0)

[*] Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). When the percentage of students is either 0 percent or 100 percent, the standard error is inestimable. However, percentages 99.5 percent and greater were rounded to 100 percent and percentages 0.5 percent or less were rounded to 0 percent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Summary

At age 9, students showed significant gains between 1978 and 1992 at Levels 150, 200, and 250, although progress stalled between 1990 and 1992. In 1992, almost all the 9-year-olds (99 percent) demonstrated understanding of simple arithmetic facts (Level 150), about four-fifths (81 percent) showed beginning skills and understandings (Level 200), and 28 percent were able to perform numerical operations and beginning problem solving (Level 250).

Thirteen-year-olds had increased performance between 1978 and 1992 at Levels 200 and 250. At age 13, virtually all students had reached Level 150 in each assessment, and, in 1992, this was also true of Level 200. Seventy-eight percent performed at or above Level 250 in 1992, and 19 percent reached Level 300. Unfortunately, the percentage attaining Level 300 has remained about the same in each of the six mathematics trend assessments.

Virtually all 17-year-olds performed at or above Level 200 in each of mathematics trend assessments. Between 1978 and 1992, these students showed increases at Levels 250 and 300. In 1992, almost all (97 percent) reached Level 250 and 59 percent reached Level 300, which is characterized by an ability to use moderately complex procedures and reasoning. The 7 percent of 17-year-olds demonstrating success with multi-step problem solving and algebra (Level 350) has remained essentially the same in each of the assessments.

Between 1978 and 1992, gains were made by White, Black, and Hispanic students at all three ages. There were impressive gains by White, Black, and Hispanic 9-year-olds at Level 200. However, the performance gaps remained large — 87 percent of the White students performed at or above this level, versus 60 to 65 percent for Black and Hispanic students. At Level 250, White and Black students made gains, but not Hispanic students. In 1992, 32 percent of the White 9-year-olds reached Level 250, compared to 10 to 12 percent of the Black and Hispanic students.

At age 13, the race/ethnicity performance gap closed at Level 200 and narrowed at Level 250. At Level 250, all three racial/ethnic groups made impressive gains, with 1992 performance being 85 percent for White students, 51 percent for Black students, and 63 percent for Hispanic students. At Level 300, none of the three groups showed improvement, with 1992 performance being 23 percent for White students, 4 percent for Black students, and 7 percent for Hispanic students.

At age 17, the performance gaps were nearly closed at Level 250, with from 90 to 98 percent of the students reaching that level in 1992 regardless of racial/ethnic group. However, despite substantial increases between 1978 and 1992 for Black and Hispanic students, large performance differences remained at Level 300. In 1992, 66 percent of the White students performed at or above Level 300, compared to 30 percent of the Black students and 39 percent of the Hispanic students. Few 17-year-olds attained Level 350 in 1992 — 7 percent of the White students and 1 percent for both Black and Hispanic students.

Across the grades and scale levels, in general, males and females had similar performance in 1978, showed nearly equivalent improvement at each level across time, and, thus, had very similar performance in 1992. Some concern may reside at Level 300 for age 13 and Level 350 for age 17, where there were slight gender gaps favoring males and no improvement was shown by students of either gender between 1978 and 1992.

These results indicate improvement across assessments, in that almost all students are gaining basic mathematical understandings. Improvements occurred in the middle ranges of the scale for all three ages, including Levels 200 and 250 at ages 9 and 13, and Levels 250 and 300 at age 17. Further, some performance gaps between White students and their Black and Hispanic counterparts were nearly eradicated across the 19-year period (Level 150 at age 9, Level 200 at age 13, and Level 250 at age 17). On the other hand, the trends suggest no change in the percentages of 13- and 17-year-olds learning more advanced material, and some other performance gaps remained large between White students and their Black and Hispanic counterparts (e.g., Levels 200 and 250 at age 9, Levels 250 and 300 at age 13, and Levels 300 and 350 at age 17).

6

Patterns and Trends in School and Home Contexts for Learning Mathematics

Trends in Classroom Instruction at Age 17 from 1978 to 1992

Recommendations for reform in school mathematics include curriculum revision, more active learning and problem solving by students, encouragement of more students to take advanced mathematics, and increased use of technology (both calculators and computers).[32] If students are to learn mathematics in a way that will promote its use in their lives, it is proposed that they focus on developing problem-solving and logical reasoning skills, learning to communicate mathematically, and making connections between the mathematics they study and its applications in other disciplines and activities. According to *Measuring What Counts*, "the mathematics taught in school must change in support of the way mathematics is used in our society. . . . There has been a dramatic increase in the need to interpret, evaluate, and understand quantitative information presented in a variety of contexts."

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[32] *Measuring What Counts* (Washington, DC: Mathematical Sciences Education Board and National Research Council, National Academy Press, 1993).

Professional Standards for Teaching School Mathematics (Reston, VA: National Council of Teachers of Mathematics, 1991).

Reshaping School Mathematics: A Philosophy and Framework for Curriculum (Washington, DC: Mathematical Sciences Education Board and National Research Council, National Academy Press, 1991).

Curriculum and Evaluation Standards for School Mathematics (Reston, VA: National Council of Teachers of Mathematics, 1989).

Everybody Counts: A Report to the Nation on the Future of Mathematics Education, Lynn Steen, editor (Washington, DC: National Research Council, National Academy Press, 1989).

The NAEP trend results provide the percentage of 17-year-olds who were involved in various classroom activities in 1978 compared to 1992. These activities include several in which students might be more actively engaged in mathematics learning, such as participating in discussions and making reports or projects. They also cover more passive activities, such as listening to the teacher and watching the teacher do problems on the board. The results are presented in Table 6.1.

In 1992, substantial proportions of students, from 60 to 85 percent, reported that they often listened to teacher explanations, discussed mathematics, watched the teacher work mathematics problems on the board, and took mathematics tests. These students generally had higher average mathematics performance than students who engaged in these activities only sometimes, and particularly compared to the few students who reported never participating in such activities. The 74 percent of the 17-year-olds who reported either sometimes or often working problems on the board had higher average proficiency than the students who reported they never did so. The very few students, 4 percent, who reported often doing projects and reports, appeared to have lower average proficiency than those reporting doing projects only sometimes or never, although the estimate was relatively unstable. Most students, 75 percent, reported never being asked to do projects and reports.

Table 6.1

Trends in Mathematics Classroom Activities at Age 17, 1978 to 1992

In your high school mathematics courses, how often did you. . .	Year	OFTEN		SOMETIMES		NEVER	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Listen to a teacher explain a mathematics lesson?	1992	85(0.9)	308(1.2)	12(0.6)	295(2.6)	3(0.6)	288(4.1)
	1978	79(1.2)*	304(1.5)	19(1.1)*	294(3.2)	2(0.4)	282(6.0)
Discuss mathematics in class?	1992	60(1.1)	309(1.3)	31(0.8)	303(1.8)	9(1.0)	295(3.2)
	1978	51(1.5)*	306(1.8)	43(1.4)*	298(1.8)	7(0.6)	289(4.0)
Watch the teacher work mathematics problems on the board?	1992	85(0.8)	308(1.3)	12(0.9)	295(2.2)	3(0.6)	282(5.5)
	1978	80(1.1)*	304(1.5)	18(0.9)*	292(2.9)	2(0.4)	282(5.2)
Work mathematics problems on the board?	1992	26(1.5)	307(1.8)	48(1.6)	309(1.4)	26(1.3)	300(2.0)
	1978	28(1.3)	303(1.9)	60(1.2)*	302(1.8)*	12(1.1)*	293(3.9)
Make reports or do projects on mathematics?	1992	4(0.5)	296(5.3)	22(1.3)	307(2.0)	75(1.6)	306(1.4)
	1978	2(0.2)*	286(8.3)	23(1.2)	300(2.5)	75(1.3)	302(1.5)
Take mathematics tests?	1992	83(0.7)	308(1.2)	16(0.8)	301(3.0)	1(0.4)	270(5.8)
	1978	64(1.3)*	308(1.7)	33(1.1)*	292(2.1)*	3(0.5)	270(4.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

With the exception of working problems on the board, greater percentages of students reported frequent participation in each of these activities in 1992 than in 1978. Interestingly, there was a sizeable increase in the percentage of 17-year-olds who reported that they "often" took mathematics tests. It is also interesting that the more passive activities of listening to the teacher and watching the teacher work problems were reported as increasing, together with class discussion, which could be more student centered.

The low degree of participation in mathematics reports and projects is not consistent with recommendations for reform in school mathematics. In both assessments, about three-fourths of the 17-year-olds reported never having done these types of activities. In 1992, activities generally considered more student centered remained far less prevalent than listening to teacher explanations, watching the teachers work problems, or taking tests. Approximately 85 percent of the 17-year-olds reported that they "often" participated in each of these three activities, compared to 60 percent for discussing mathematics, 26 percent for doing their own boardwork, and 4 percent for doing reports or projects.

Trends in 17-year-olds' responses to a question about their level of understanding in mathematics class are presented in Table 6.2. In 1992, only 72 percent of the 17-year-olds strongly agreed or agreed that they understood what was talked about in mathematics class, but this represented an increase compared to 1978 (67 percent). Significantly more White students in 1992 agreed that they understood what was talked about in mathematics class, but there was no change reported by Black or Hispanic students. More females reported usually understanding what was talked about in mathematics class in 1992 than 1978, while the results for males did not change significantly. Reports of greater understanding were related to higher average performance for White students and for both genders.

Table 6.2
Trends in Percentages of Students Understanding Their Mathematics Class Discussion at Age 17, 1978 to 1992

		STRONGLY AGREE OR AGREE		UNDECIDED, STRONGLY DISAGREE OR DISAGREE	
I usually understand what we are talking about in mathematics.	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Age 17	1992	72(1.0)	310(1.4)	28(1.0)	300(1.5)
	1978	67(1.1)*	303(1.8)*	33(1.1)*	290(2.1)*
White	1992	73(1.1)	316(1.2)	27(1.1)	304(1.7)
	1978	67(1.4)*	309(1.7)*	33(1.4)*	294(2.1)*
Black	1992	71(3.3)	286(4.4)	29(3.3)	287(4.1)
	1978	72(2.4)	267(2.9)*	28(2.4)	257(3.9)*
Hispanic	1992	66(4.0)	295(3.9)	34(4.0)	292(5.8)
	1978	62(5.1)	271(5.5)*	38(5.1)	269(5.8)*
Male	1992	74(1.7)	313(1.5)	26(1.7)	300(2.1)
	1978	71(1.5)	307(2.2)	29(1.5)	292(2.8)
Female	1992	71(1.8)	308(2.2)	29(1.8)	300(2.5)
	1978	64(1.8)*	298(2.0)*	36(1.8)*	288(2.5)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Mathematics Course Taking at Ages 13 and 17 from 1978 to 1992

Recent studies comparing mathematics education programs in the United States with those of other countries have found our curriculum to be less rigorous and demanding.[33] Further, reform recommendations emphasize a more broadly based approach integrating mathematics content areas from the elementary grades onward.[34] This section provides data about trends in mathematics course taking at ages 13 and 17. At both ages, students taking more advanced courses had higher average proficiency, a finding that reflects the practice of tracking higher achieving students into these courses and demonstrates the benefits of taking them.

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[33] Stevenson, H. W. & Stigler, J. W., *The Learning Gap, Why Our Schools Are Failing and What We Can Learn from Japanese and Chinese Education* (New York, NY: Summit Books, 1992).

Lapointe, A. E., Mead, N. A., & Askew, J. M., *Learning Mathematics* (Princeton, NJ: Educational Testing Service, 1992).

Wirzup, I. & Streit, R., *Developments in School Mathematics Education Around the World* (Vol. 3). (Reston, VA: National Council of Teachers of Mathematics, 1992).

Table 6.3 presents trends in mathematics classes taken by 13-year-olds, who are primarily in the seventh and eighth grades. Between 1986 and 1992, there was a significant decrease in the percentage of students taking regular mathematics together with a significant increase in the percentage taking pre-algebra. The percentage of students reporting being in an algebra class remained constant.

Table 6.3

Trends in Mathematics Course Taking at Age 13, 1986 to 1992

	ALGEBRA		**PRE-ALGEBRA**		**REGULAR MATH**		**OTHER**	
	Percent of Students	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
1992	17(1.1)	298(1.4)	27(1.3)†	280(0.9)	51(1.6)†	264(1.0)†	5(0.4)	266(3.5)
1990	15(1.0)	296(1.3)	23(1.3)	281(1.1)	57(1.7)*	262(0.8)	5(0.5)	262(3.7)
1986	16(2.0)	299(1.6)	19(1.8)*	280(1.2)	60(3.0)*	261(0.9)*	5(0.5)	262(3.8)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1986, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Table 6.4 presents trends in mathematics course taking for the 17-year-olds, who were primarily juniors in high school. The data shows students' reports about the highest level mathematics course they have studied. Increased percentages of the 17-year-olds reported pursuing coursework further along the curriculum continuum from general mathematics/prealgebra through algebra and geometry, and even on to calculus. While a number of states require students to complete at least two years of mathematics, only a few states require as many as three years.[35]

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[34] *Curriculum and Evaluation Standards for School Mathematics* (Reston, VA: National Council of Teachers of Mathematics, 1989).

[35] Blank, R., *State Education Policies on Science and Mathematics* (Washington, DC: Council of Chief State School Officers, 1987).

Table 6.4

Trends in Highest Level of Mathematics Course Taken at Age 17, 1978 to 1992

		NATION	WHITE	BLACK	HISPANIC	MALE	FEMALE
Prealgebra or General Mathematics							
1992:	Percent	14(1.1)	12(1.0)	15(2.7)	25(4.7)	14(1.3)	13(1.0)
	Proficiency	271(1.6)	276(1.7)	256(4.8)	269(3.1)	275(2.3)	267(1.6)
1978:	Percent	20(1.0)*	18(1.1)*	31(1.3)*	36(3.1)	21(1.0)*	20(1.1)*
	Proficiency	267(0.8)*	272(0.6)	247(1.6)	256(2.3)*	269(1.0)	264(0.9)
Algebra I							
1992:	Percent	14(0.8)	12(0.8)	19(2.6)	18(2.2)	16(1.0)	12(1.1)
	Proficiency	289(1.1)	293(1.0)	279(3.4)	285(3.1)	291(1.7)	287(1.8)
1978:	Percent	17(0.6)*	17(0.6)*	19(1.2)	19(2.1)	15(0.6)	18(0.7)*
	Proficiency	286(0.7)	291(0.6)	264(1.5)*	273(2.8)*	289(0.9)	284(1.0)
Geometry							
1992:	Percent	16(0.9)	16(1.0)	18(2.3)	18(2.5)	16(1.1)	17(1.1)
	Proficiency	302(1.6)	306(1.6)	283(3.4)	297(3.9)	306(2.0)	297(2.0)
1978:	Percent	16(0.6)	17(0.7)	11(0.8)*	12(1.2)	15(0.5)	18(0.8)
	Proficiency	307(0.7)*	310(0.6)	281(1.9)	294(4.4)	310(1.0)	304(0.8)*
Algebra II							
1992:	Percent	45(1.6)	47(1.7)	38(3.8)	33(5.8)	42(2.0)	47(1.5)
	Proficiency	320(0.7)	323(0.9)	301(2.2)	312(2.0)	323(1.1)	317(1.0)
1978:	Percent	37(1.2)*	39(1.3)*	28(2.1)	23(2.5)	38(1.2)	37(1.3)*
	Proficiency	321(0.7)	325(0.6)	292(1.4)*	303(2.9)*	325(0.8)	318(0.9)
Precalculus or Calculus							
1992:	Percent	10(0.8)	10(1.0)	7(1.9)	4(0.9)	10(1.0)	9(0.9)
	Proficiency	343(1.7)	347(1.6)	313(5.7)	320(7.3)	344(2.7)	341(2.0)
1978:	Percent	6(0.4)*	6(0.4)*	4(0.6)	3(0.9)	7(0.5)*	4(0.4)*
	Proficiency	334(1.4)*	338(1.1)*	297(6.5)	306(6.1)	337(2.0)	329(1.8)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages of students may not total 100 percent because a small percentage of students reported having taken other mathematics courses.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Considering that these students generally were eleventh graders, the 10 percent having taken precalculus or calculus is understandable. Also, it represents a modest increase compared to the 6 percent so reporting in 1978. Nevertheless, these data show that many students do not take full advantage of their opportunity to study mathematics during high school. By combining the 10 percent of the students who reported going on to some type of calculus study with the 45 percent of the students who reported having taken Algebra II, one obtains a total of 55 percent — barely more than half — of these high school juniors who have studied Algebra II. There was, however, a significant decrease in the percentage of students curtailing their study at the pre-algebra level, and a significant increase in those completing Algebra II as their capstone course.

The increases in advanced coursework, Algebra II or precalculus/calculus, were commensurate across subgroups of students as classified by race/ethnicity, with 11 to 13 percent taking more advanced courses. In 1992, 57 percent of the White 17-year-olds compared to 45 and 37 percent of their Black and Hispanic counterparts, respectively, had taken Algebra II or precalculus/calculus. Females closed the course-taking gap with males though, with 56 percent of the females in 1992 compared to 52 percent of the males reporting advanced coursework.

Taken together, Tables 6.3 and 6.4 show that more students in the middle schools were studying pre-algebra rather than regular mathematics, and that more were pursuing the study of advanced algebra in high school. These increases were reported by subgroups of students as classified by race/ethnicity and gender. Despite this progress, however, in 1992, relatively few 17-year-olds reported actually having taken the more challenging courses.

Trends in the Use of Technology in Mathematics Classes at Ages 13 and 17 from 1978 to 1992

Because the technologies of calculators, graphing calculators, and computers afford opportunities for students to analyze many more situations involving concepts, engage in more applications of procedures, and generally expand their avenues of exploration, greater reliance on technology is consistently stressed among suggestions for more effective mathematics instruction. *The NCTM Standards* call for the use of calculators across the curriculum from the primary grades forward, and there is the expectation that they will be available for use both in class and during testing settings. To measure progress in students' performance using a calculator, since 1978 the NAEP mathematics assessments have included a small set of calculator questions common to each assessment.[36] The results are summarized in Table 6.5. Consistent with the overall national trends, significant growth in the percentage of questions answered correctly occurred at all three ages between 1978 and 1992 on the questions where students were provided with a calculator.

Table 6.5

Trends in Average Percentage Correct Using a Calculator at Ages 9, 13, and 17, 1978 to 1992

	1978	1982	1986	1990	1992
Age 9 (8 items)	74(1.0)*	75(0.8)*	75(0.7)*	78(0.9)*†	80(0.5)†
Age 13 (8 items)	55(1.4)*	52(1.4)*	55(1.4)*	60(1.0)†	62(1.3)†
Age 17 (11 items)	63(1.0)*	59(1.2)*†	65(1.2)	66(1.0)	67(0.8)†

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1978, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

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[36] The NAEP mathematics assessments newly developed in conjunction with the Trial State Assessment Program provide students with calculators to use with portions of the assessment (see *NAEP 1992 Mathematics Report Card for the Nation and the States*).

Thirteen- and 17-year-olds were also asked a number of questions about the availability and use of computers in mathematics instruction. Their responses in both 1978 and 1992 are shown in Table 6.6. In 1992, dramatically increased percentages of students aged 13 years old reported access to computers for mathematics learning (49 compared to 12 percent) and that they had studied mathematics through computer instruction (53 compared to 14 percent). The percentage reporting that they had used a computer to solve mathematics problems also increased between 1978 and 1992 (from 56 to 71 percent). Thus, in 1992, about half the 13-year-olds had encountered computers in their instruction and somewhat more had taken advantage of this technology to work on problems.

Table 6.6

Trends in Availability and Use of Computers at Ages 13 and 17, 1978 to 1992

		PERCENTAGES OF STUDENTS REPORTING "YES"					
		Age 13			**Age 17**		
		Nation	**Upper Quartile**	**Lower Quartile**	**Nation**	**Upper Quartile**	**Lower Quartile**
Had Access to Computer to Learn Mathematics							
1992:	Percent	49(2.5)	53(4.1)	49(3.2)	58(1.9)	63(3.1)	51(4.1)
	Proficiency	274(1.5)	311(1.5)	235(1.8)	308(1.7)	344(1.0)	268(1.4)
1978:	Percent	12(1.8)*	11(3.1)*	16(2.2)*	24(2.7)*	42(5.0)*	13(2.2)*
	Proficiency	262(4.1)*	304(3.9)	219(7.1)	314(2.9)	344(2.2)	259(4.0)
Studied Mathematics through Computer Instruction							
1992:	Percent	53(2.4)	60(3.8)	49(2.8)	35(2.0)	43(2.7)	37(4.3)
	Proficiency	275(1.7)	311(1.6)	234(2.3)	307(2.4)	345(1.5)	267(1.3)
1978:	Percent	14(0.9)*	16(2.2)*	14(1.5)*	12(1.1)*	19(3.6)*	9(1.5)*
	Proficiency	267(3.2)	304(3.7)	218(5.8)*	309(4.7)	344(3.9)	262(3.8)
Used a Computer to Solve Mathematics Problems							
1992:	Percent	71(1.4)	75(2.5)	70(2.4)	64(1.8)	73(2.8)	58(3.2)
	Proficiency	273(1.3)	310(1.3)	235(1.9)	308(1.7)	344(1.1)	268(1.1)
1978:	Percent	56(1.4)*	63(2.9)*	51(3.0)*	46(1.5)*	53(3.8)*	41(2.4)*
	Proficiency	268(1.8)	303(1.9)*	223(2.8)*	303(2.1)	343(2.1)	262(1.9)*
Took a Course in Computer Programming							
1992:	Percent	Question not asked at age 13.			30(1.0)	32(2.1)	29(1.9)
	Proficiency				309(1.2)	343(1.5)	270(1.6)
1978:	Percent				10(0.9)*	19(2.1)*	5(0.5)*
	Proficiency				318(2.0)*	343(1.3)	263(1.3)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

At age 17, there also were substantial increases in "yes" responses to the computer-use questions. In 1992, 58 percent of the 17-year-olds reported access to a computer to learn mathematics, up from 24 percent in 1978. Also, 35 percent reported having studied mathematics through computer instruction, up from 12 percent in 1978. Greater percentages of 17-year-olds reported using a computer to solve mathematics problems in 1992 than in 1978 — 64 compared to 46 percent. In 1992, 30 percent of the 17-year-olds reported that they had taken a course in computer programming, compared to only 10 percent so reporting in 1978.

In general, the increases related to computer availability and use were commensurate for students in the lower and upper performance quartiles. In 1992, the pattern was toward more availability and use for upper quartile students, although most of the differences were not statistically significant.

Trends in Attitudes Toward Mathematics at Ages 13 and 17 from 1978 to 1992

Students' attitudes toward studying mathematics, as well as their beliefs about its value and relevance to their present and future lives, may affect both their desire to study the subject and their success with it.[37] At ages 13 and 17, a set of questions about students' perception of mathematics has been included across assessments, including four questions about their personal experience with the subject and two about their views of the discipline. In general, students with more positive attitudes had higher average mathematics proficiency.

The findings for the 1978 and 1992 assessments are presented in Table 6.7. In 1992, about two-thirds or more of the 13- and 17-year-olds strongly agreed or agreed that mathematics improves logical thinking skills (a decrease between 1978 and 1992 at age 13), and similar percentages were neutral or disagreed to some extent that new discoveries were seldom made in mathematics (which represented a decrease at age 17). This latter finding suggests that the 17-year-olds may not be learning to see mathematics as a dynamic field of study.

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[37] Stevenson, H. W. & Stigler, J. W., *The Learning Gap, Why Our Schools Are Failing and What We Can Learn from Japanese and Chinese Education* (New York, NY: Summit Books, 1992).

Everybody Counts: A Report to the Nation on the Future of Mathematics Education, Lynn Steen, editor (Washington, DC: National Research Council, National Academy Press, 1989).

Table 6.7

Trends in Attitudes Toward Mathematics at Ages 13 and 17, 1978 to 1992

	STRONGLY AGREE OR AGREE		UNDECIDED, DISAGREE, OR STRONGLY DISAGREE	
	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
I would like to take more mathematics.				
Age 13: 1992	44(1.6)	275(2.3)	56(1.6)	272(1.4)
1978	50(1.5)*	263(2.6)*	50(1.5)*	268(1.4)
Age 17: 1992	40(1.3)	312(1.8)	60(1.3)	304(1.3)
1978	39(1.7)	304(2.0)*	61(1.7)	295(1.7)*
I am taking mathematics only because I have to.				
Age 13: 1992	24(1.1)	266(2.5)	76(1.1)	276(1.8)
1978	29(1.4)*	256(2.4)*	71(1.4)*	270(1.9)*
Age 17: 1992	28(1.1)	298(2.0)	72(1.1)	311(1.1)
1978	27(1.5)	287(2.5)*	73(1.5)	302(1.8)*
I am good at mathematics.				
Age 13: 1992	71(1.1)	277(1.8)	29(1.1)	265(1.5)
1978	65(1.3)*	270(2.0)*	35(1.3)*	258(1.9)*
Age 17: 1992	59(1.0)	314(1.5)	41(1.0)	298(1.3)
1978	54(1.5)*	306(2.0)*	46(1.5)*	289(1.5)*
Mathematics is more for boys than girls.				
Age 13: 1992	3(0.4)	266(6.7)	97(0.4)	274(1.5)
1978	2(0.3)	247(6.1)	98(0.3)	266(1.7)*
Age 17: 1992	3(0.5)	312(5.8)	97(0.5)	307(1.2)
1978	2(0.3)	291(7.0)	98(0.3)	299(1.6)*
Mathematics helps a person think logically.				
Age 13: 1992	69(1.2)	276(1.7)	31(1.2)	269(2.0)
1978	74(1.1)*	268(1.9)*	26(1.1)*	261(2.4)*
Age 17: 1992	74(1.1)	311(1.2)	26(1.1)	298(1.7)
1978	77(1.1)	301(1.7)*	23(1.1)	289(2.2)*
New discoveries are seldom made in mathematics.				
Age 13: 1992	34(1.2)	269(2.0)	66(1.2)	276(1.8)
1978	36(1.5)	255(2.2)*	64(1.5)	272(1.5)
Age 17: 1992	33(1.2)	303(1.8)	67(1.2)	310(1.3)
1978	19(1.2)*	284(3.2)*	81(1.2)*	302(1.5)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages of students may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Despite students' relatively positive attitudes about these two aspects of mathematics as a discipline, they were less positive about studying it. In 1992, only 44 percent of the 13-year-olds — down from 50 percent in 1978 — and 40 percent of the 17-year-olds (essentially no change from 1978) reported that they would like to take more mathematics. Approximately one-fourth of the students at both ages reported that they were only taking mathematics because they had to, which did represent a decrease between 1978 and 1992 at age 13 (from 29 to 24 percent).

Students' confidence in their own mathematical abilities increased between 1978 and 1992 at both ages. Similar to findings in 1978, more 13-year-olds in 1992 (71 percent) reported that they were good at mathematics than did 17-year-olds attending school (59 percent). In both 1978 and 1992, very few students at either age (about 3 percent) strongly agreed or agreed that mathematics was more for boys than for girls.

Trends in Television Watching at Ages 9, 13, and 17 from 1978 to 1992

Table 6.8 contains students' reports about the amount of time they spend watching television per day. Especially at ages 13 and 17, there was a relationship between more television viewing and lower average mathematics proficiency. At ages 9 and 13, the general trend was from the extremes to the mid-ranges of daily viewing — 3 to 5 hours. At age 17, the trend was toward more hours of television viewing each day.

Table 6.8

Trends in Television Watching at Ages 9 and 13, 1982 to 1992; and at Age 17, 1978 to 1992

	NUMBER OF HOURS WATCHED PER DAY					
	0-2 Hours		3-5 Hours		6 or More Hours	
	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Age 9						
1992	40(1.0)	231(1.1)	41(0.8)	233(1.0)	19(0.8)	219(1.4)
1982	44(1.1)*	218(1.4)*	29(0.6)*	227(1.1)*	26(1.0)*	214(1.2)*
Age 13						
1992	36(1.1)	280(1.1)	51(1.0)	273(1.0)	13(0.6)	255(1.8)
1982	45(0.8)*	273(1.2)*	39(0.4)*	269(1.1)*	16(0.8)*	256(1.8)
Age 17						
1992	53(1.4)	314(0.9)	40(1.1)	300(0.9)	7(0.5)	285(2.3)
1978	69(0.7)*	305(1.0)*	26(0.6)*	296(1.1)*	5(0.2)*	279(2.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding. Data from 1978 are not available at ages 9 and 13.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Between 1982 and 1992, fewer 9-year-old students reported watching 0 to 2 hours per day, from 44 to 40 percent, and fewer reported watching 6 or more hours per day, from 26 to 19 percent. The percentage watching from 3 to 5 hours of television each day increased from 29 to 41 percent. A similar pattern was found at age 13, where the percentage watching 0 to 2 hours decreased from 45 to 36 percent and the percentage watching 6 or more hours decreased from 16 to 13 percent. Commensurately, the percentage watching from 3 to 5 hours increased substantially from 39 to 51 percent.

At age 17, between 1978 and 1992, the percentage watching from 0 to 2 hours per day decreased from 69 to 53 percent, while the percentage watching 3 to 5 hours increased significantly from 26 to 40 percent. Few 17-year-olds in either assessment reported watching 6 or more hours per night, although the increase between 1978 and 1992 from 5 to 7 percent was statistically significant.

Since 1986, NAEP has tracked students' responses to a question about whether their family has any rules about watching television. As shown in Table 6.9, the response percentages were nearly identical within each of the three age groups across all three assessments. According to students' reports, in 1992, 39 percent of the 9-year-olds had rules about watching television, compared to 27 percent of the 13-year-olds and 12 percent of the 17-year-olds. There was no difference, however, in average proficiency between students who reported having rules and those without rules.

Table 6.9

Trends in Students' Reports About Family Rules About Television Watching at Ages 9, 13, and 17, 1986 to 1992

	YES		NO	
	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Age 9				
1992	39(1.0)	230(1.0)†	61(1.0)	230(0.9)†
1990	38(0.7)	229(1.4)†	62(0.7)	230(0.9)†
1986	37(0.7)	220(1.0)*	63(0.7)	223(1.2)*
Age 13				
1992	27(0.8)	274(1.3)	73(0.8)	273(0.9)†
1990	26(0.7)	271(1.3)	74(0.7)	270(0.9)
1986	26(1.2)	270(1.6)	74(1.2)	269(1.1)*
Age 17				
1992	12(0.7)	308(2.1)†	88(0.7)	307(0.8)†
1990	12(0.7)	305(2.3)	88(0.7)	305(0.9)
1986	11(0.6)	300(2.4)*	89(0.6)	303(0.8)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1986, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

Trends in Doing Mathematics Homework at Age 17, 1978 to 1992

Discussions about raising both expectations for students and the time devoted to mathematics instruction can involve the issue of how much homework students are given on a regular basis. As part of the mathematics trend assessments, 17-year-olds have been asked generally how often they do mathematics homework. The results are provided in Table 6.10.

Table 6.10

Trends in Frequency of Doing Mathematics Homework at Age 17, 1978 to 1992

	OFTEN		SOMETIMES		NEVER	
	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
1992	76(1.2)†	310(1.1)	19(0.9)†	295(1.8)	5(0.7)	285(4.1)
1990	77(1.3)†	310(1.7)	18(1.1)†	295(2.0)	5(0.7)	281(3.5)
1986	74(1.2)†	304(1.1)*†	20(1.4)†	296(1.8)	5(0.7)	291(5.5)
1982	65(1.7)*	307(1.5)	29(1.6)*	291(2.1)	6(0.6)	284(3.4)
1978	59(2.0)*	309(1.6)	35(1.9)*	291(2.1)	6(0.7)	284(3.5)

*Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Mathematics Trend Assessment

There was a direct positive relationship between the frequency of doing homework and average mathematics proficiency. Between 1978 and 1992, there was an increase in the percentage of 17-year-olds reporting they did homework "often" and a decrease in the percentage reporting that they did homework "sometimes." The percentage reporting "never" doing homework remained constant across assessments at approximately 5 percent. These findings are consistent with recommendations that more consideration be given to strongly encouraging academic achievement.[38] The trends from assessment to assessment indicate significant progress in this direction between 1978 and 1986, with a leveling off between 1990 and 1992.

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[38] Oakes, J., "Tracking in Elementary Schools: A Contextual Perspective," *Educational Psychology*, 22 Spring, 1987.

Summary

Recommendations for reforming school mathematics involve a concerted effort across various aspects of the educational enterprise. For example, a more challenging and broadly based curriculum is suggested, as are more student-active and relevant instructional approaches. Central to reform goals are encouraging all students to continue their study of mathematics through high school, and helping all students develop a better understanding of the power of mathematics. Finally, home and societal support for mathematics learning plays a key role in supporting educational reforms in school mathematics.

Although none of these concerns was addressed on a widespread basis as part of the 1992 mathematics trend assessment, looking across the variables discussed in this chapter provides a consistent pattern of slow, but positive, changes in several of these areas. For example, between 1986 and 1992, more 13-year-olds reported taking pre-algebra and fewer taking "regular" mathematics. Similarly, between 1978 and 1992, more 17-year-olds reported continuing along in the mathematics course-taking pipeline through Algebra II — from 37 to 45 percent. There even was an increase, from 6 to 10 percent, in the percentage of students who had taken precalculus or calculus, although the percentage remained quite low.

In 1992, there also was evidence that students were encountering more use of technology in their mathematics classes. For example, students at all three ages improved in their ability to answer questions with the aid of a calculator. At ages 13 and 17, significantly more students reported access to computers, and the percentages reporting use of computers for mathematics learning also increased significantly. In 1992, 49 percent of the 13-year-olds and 58 percent of the 17-year-olds reported having access to a computer to learn mathematics.

Despite some fluctuations, students' perceptions about mathematics at ages 13 and 17 remained relatively similar between 1978 and 1992. In 1992, although the majority seemed to understand some benefits of mathematics (e.g., that it helps a person think logically and that it makes new discoveries), only from 40 to 44 percent would like to take more mathematics. Approximately one-fourth of the students at both ages reported that they were only taking mathematics because they had to do so. At both ages 13 and 17, more students in 1992 than in 1978 expressed confidence in their mathematical abilities. In 1992, 71 percent of the 13-year-olds and 59 percent of the 17-year-olds strongly agreed or agreed that they were good in mathematics.

More 9- and 13-year-olds reported 3 to 5 hours of daily television viewing in 1992 than a decade ago. The percentages reporting 3 to 5 hours increased from 29 to 41 percent at age 9 and from 39 to 51 percent at age 13, while the percentages reporting 0 to 2 hours decreased from 44 to 40 percent at age 9 and from 45 to 36 percent at age 13. However, there also was a significant decrease in the percentages who reported watching 6 or more hours per day, from 26 to 19 percent at age 9 and from 16 to 13 percent at age 13. At age 17, there was an increase in daily television viewing between 1978 and 1992. The percentage watching from 3 to 5 hours increased from 26 to 40 percent and the percentage watching 6 or more hours showed a small, but significant increase from 5 to 7 percent.

Students reported no change between 1986 and 1992 in having family rules about watching television. In 1992, 39 percent at age 9, 27 percent at age 13, and 12 percent at age 17 reported having such rules. Also, in conjunction with their reports about increased television viewing between 1978 and 1992, 17-year-olds also reported some increased attention to mathematics homework. Between 1978 and 1992, the percentage reporting that they often did mathematics homework increased significantly, from 59 to 76 percent, while the percentage reporting sometimes doing such homework decreased from 35 to 19 percent. However, the trend toward more homework leveled off between 1986 and 1992.

Part III

Trends in Reading Achievement from 1971 to 1992

Introduction

To monitor progress across time in the reading achievement of American students, NAEP has conducted seven national assessments of reading performance involving nationally representative samples of 9-, 13-, and 17-year-olds. These seven assessments were conducted in the 1970-71, 1974-75, 1979-80, 1983-84, 1987-88, 1989-90, and 1991-92 school years. They are subsequently referred to by the last half of the school year in which they occurred — 1971, 1975, 1980, 1984, 1988, 1990, and 1992.

Concern about the literacy proficiency of our nation's students continues to be a major educational, social, and political issue. Although helping students to read beyond only surface understanding has long been a goal of reading instruction, research indicates that students of all ages have difficulty reading and responding thoughtfully.[39] In response to such findings, reading achievement has become vital to educational reform efforts throughout the country, at the national and state levels. Central to these efforts, *The National Education Goals Report* has highlighted competency in English and increased levels or literacy and life-long learning.[40] Clearly, these goals are only attainable if students develop the literacy abilities, attitudes, and habits that characterize expert readers.

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[39] Mullis, I. V. S., Campbell, J. R., & Farstrup, A. E., *NAEP 1992 Reading Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Foertsch, M. F., *Reading In and Out of School* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1992).

During the last two decades, the field of reading has witnessed tremendous debates over issues related to reading theory and reading instruction[41]. These discussions have resulted in an increased awareness of the complexities of the reading process and how important the context of learning to read is to the developing reader. In addition, these concerns about how reading is viewed and how reading is taught have naturally led to intense interest in how reading is assessed.[42] What has emerged predominantly is a recognition that reading behaviors, reading instruction, and reading assessment must be approached from an integrative, contextual perspective in order to promote the more advanced, critical literacy skills necessary for today's society.[43] These current and relevant issues as well as recent historical shifts in how reading is viewed provide a dynamic context for examining and interpreting the results of NAEP's trend assessments.

As a whole, Part III of this report is intended to serve as a resource for groups concerned with improving students' reading proficiencies — not only reading experts, but also educators in other subjects, as well as policymakers, school administrators, and parents. The findings can be used, together with information from other sources, as a basis for discussing the adequacy of students' current reading proficiencies, in light of the factors that appear to be related to reading ability. These discussions may then lead to the development of means for improving reading performance in the years ahead.

NAEP has based its reading trend assessments on a wide range of text materials, from simple narrative passages to complex articles on specialized topics.[44] The selections have included stories, poems, essays, reports, and passages from textbooks of varying levels of difficulty, as well as sample train schedules, telephone bills, and advertisements. Students' comprehension has been assessed in a variety of ways. Some multiple-choice questions require students to identify particular information, while constructed-response questions ask them to restructure and interpret what they have read and to present their responses in writing. To measure performance trends, subsets of the same passages and items have been included in several successive assessments.

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[40] *The National Education Goals Report: Building a Nation of Learners.* (Report of the National Education Goals Panel: U.S. Government Printing Office, 1993).

[41] Smith, F., "Learning to Read: The Never-Ending Debate" *Phi Delta Kappan*, 432-441, February, 1992.

[42] Winograd, P., Paris, S., & Bridge, C., "Improving the Assessment of Literacy" *The Reading Teacher*, 45, 108-115.

[43] Hiebert, E. H. (Ed.), *Literacy for a Diverse Society: Perspectives, Practices, and Policies.* (New York: Teachers College, Columbia University, 1991).

[44] *Reading Objectives, 1983-84 Assessment* (Princeton, NJ: Educational Testing Service).

Students participating in each assessment were asked to provide information on their demographic characteristics, instructional experiences, and reading attitudes and behaviors. The relationships observed between reading performance and self-reported background information can provide a stimulus for educators, reading researchers, and policymakers to discuss central issues and concerns and initiate further inquiries.

NAEP's 1992 trend reading assessment measuring trends since 1971 is separate from a second reading assessment also conducted in 1992. This newly developed assessment based on a new framework represented an innovative approach to measuring reading proficiency.[45] The assessment tasks were developed as instructionally relevant activities involving the use of authentic, naturally occurring passages and predominantly constructed-response questions.[46] The 1992 assessment was designed to be responsive to the needs of the Trial State Assessment, as well as current research on effective reading instruction and assessment. Students participating in that reading assessment were selected by grade definitions and were administered new reading items at a different time of year than were those participating in the trend assessment. The results from this assessment were published in a previously released reading report, *NAEP 1992 Reading Report Card for the Nation and the States*.[47] Because of the many differences between the two reading assessments, the results are not directly comparable.

NAEP has used analysis techniques based on item response theory (IRT) to estimate students' reading proficiencies on a scale ranging from 0 to 500. The NAEP reading scale is useful in making comparisons across assessments for the three age groups and among subpopulations of students. (The Procedural Appendix contains more detailed information about analysis procedures and student subgroups.) To provide a basis for interpreting the results, the report describes what students attaining different proficiency levels on the scale are able to do. Based on the assessment results, five levels of proficiency were defined: Level 150 – Simple, Discrete Reading Tasks; Level 200 – Partially Developed Skills and Understanding; Level 250 – Interrelate Ideas and Make Generalizations; Level 300 – Understand Complicated Information; and Level 350 – Learn from Specialized Reading Materials. Essentially, students performing at Level 150 were able to carry out simple, discrete reading tasks. At Level 200, students demonstrated partial skills and basic understanding of what they read. Performance at Level 250 suggests the ability to search for specific information, interrelate ideas, and make generalizations. Students performing at Level 300 were able to find, understand, summarize, and explain relatively complicated information. Those performing at Level 350 showed some ability to synthesize and learn from specialized reading materials.

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[45] This newly developed reading assessment includes longer reading materials, such as those actually used by readers in their everyday reading, and a large number of open-ended questions. The newly developed materials were also used for the 1992 Trial State Assessment Program in reading at Grade 4.

[46] *Reading Framework for the 1992 National Assessment of Educational Progress*, National Assessment Governing Board (Washington DC: U.S. Government Printing Office).

[47] Mullis, I. V. S., Campbell, J. R., & Farstrup, A. E., *NAEP 1992 Reading Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

NAEP reports the performance of groups of students, not individuals. The measures of achievement included in this report are the average reading performance of groups of students on the NAEP proficiency scale, and the percentages of students attaining successive levels of performance on the scale. Because the average proficiencies and the percentages presented in this report are based on samples, they are necessarily estimates. Like all estimates based on surveys, they are subject to sampling as well as measurement error. NAEP uses a complex procedure to compute standard errors that estimates the sampling error and other random error associated with observed assessment results. Statistically significant differences between 1992 and prior assessments are denoted with an asterisk; statistically significant differences between 1971 and subsequent assessments are denoted with a dagger.

Each chapter in Part III provides a somewhat different perspective on trends in students' reading abilities. Chapter Seven describes changes in the average reading performance of 9-, 13-, and 17-year-olds across the seven reading trend assessments conducted by NAEP since 1971. In Chapter Eight, levels of reading proficiency are defined, and the percentages of students attaining successive levels in each assessment are presented. Chapter Nine summarizes trends in students' responses to questions about their reading instruction and experiences and investigates the relationships between these background factors and reading proficiency.

7

National Trends in Reading Proficiency from 1971 to 1992

Looking at the performance of 9-, 13-, and 17-year-old students on the NAEP reading trend assessments since 1971 provides valuable information about changes in literacy development in this country over the past 21 years. During the same period, the reading curriculum in this country has responded in various ways to the ever-growing body of research on reading and reading instruction. For example, the past 20 years have seen a movement away from a mostly skills-oriented view of reading to a more cognitive view emphasizing processes of comprehension.[48] Considering the performance of students on the NAEP reading trend assessment in the context of such curricular emphases and social changes can enhance the relevance and interpretation of these data.

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[48] Dole, J.A., Duffy, G.G., Roehler, L.R., & Pearson, D.P. "Moving from the Old to the New: Research on Reading Comprehension Instruction." *Review of Educational Research*, 61, 239-264, 1991.

The results of the seven trend assessments conducted from 1971 to 1992 are presented in Figure 7.1.

The NAEP data indicate that 13- and 17-year-old students had higher average reading proficiency in 1992 than their counterparts in 1971. However, the average performance of 9-year-olds in 1992 did not differ significantly from 1971. There were additional differences in the trends within each age group across the seven assessments.

Nine-Year-Olds

The trend analyses indicate improvements during the 1970s followed by a downward turn in average achievement. The assessments during 1980 to 1988 showed significantly higher reading performance for 9-year-old students as compared to 1971 results. However, 9-year-olds' performance on the 1992 assessment was lower than their counterparts' performance in 1980 and essentially the same as 9-year-olds' performance in 1971.

Thirteen-Year-Olds

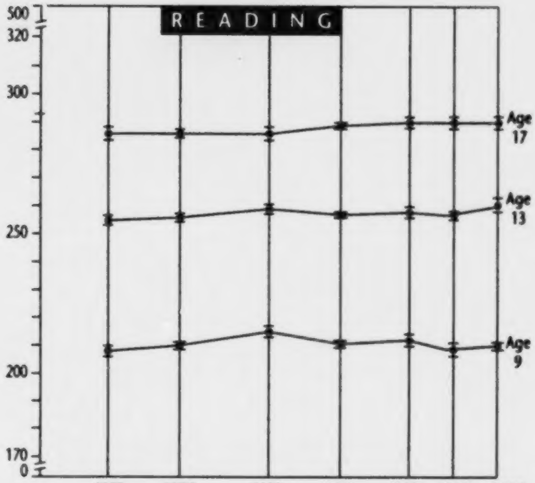
Trends for 13-year-old students reveal a different pattern. The average reading proficiency of these students was significantly higher in 1992 than it had been in 1971 and 1975. This increase in reading ability was supported by an overall linear trend across the assessments toward higher average proficiencies for 13-year-old students. (See Data Appendix for significant linear and quadratic trends.)

Seventeen-Year-Olds

A somewhat similar pattern was displayed for in-school 17-year-old students as was observed for 13-year-olds. A pattern of change toward higher proficiency was observed across the assessments during 1971 through 1984, but has leveled off since then. The average proficiency of these students did not increase between 1984 and 1992, but remained higher than it had been in 1971.

FIGURE 7.1

Trends in Average Reading Proficiency for the Nation, 1971 to 1992



	1971	1975	1980	1984	1988	1990	1992
Age 17	285(1.2)*	286(0.8)*	286(1.2)*	289(0.6)†	290(1.0)†	290(1.1)†	290(1.1)†
Age 13	255(0.9)*	256(0.8)*	258(0.9)	257(0.5)	258(1.0)	257(0.8)	260(1.2)†
Age 9	208(1.0)	210(0.7)	215(1.0)*†	211(0.7)†	212(1.1)†	209(1.2)	210(0.9)

⌶ 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1971 to 1992 by Quartiles

Table 7.1 presents average reading proficiency from 1971 to 1992 for the top 25 percent of students, the middle 50 percent, and the lowest 25 percent. These data by quartile provide a picture of the range in students' performance within and across assessments. Additionally, they reveal the changes that have occurred in the last 21 years for students at different points along the distribution, demonstrating whether gains or losses made overall were evident across the full range of reading proficiencies. This information is particularly relevant in light of Goal 3 of *The National Education Goals Report*, which states that the number of students at all levels of achievement will increase significantly in all areas of academic performance. The emphasis is that all students should be given opportunities to make advancements and should demonstrate gains in educational achievement. As can be seen by the data in Table 7.1, varied patterns of change were evident for the three age groups across the performance distribution.

At the upper end of the proficiency scale, 9- and 13-year-olds demonstrated higher proficiency in 1992 than in 1971. Seventeen-year-olds had returned to the level of performance achieved in 1971 after a significant decline in 1980. Trends in proficiency among students in the middle of the distribution were less consistent. Despite a significant improvement in 1992 over 1990 performance, which indicated some recovery from declines since 1980, 9-year-olds performing in the middle of the distribution have not returned to the higher level of performance achieved during 1980 and remain at the 1971 level. However, the performance of 13- and 17-year-olds in the middle of the distribution has shown modest improvement across the assessments and was significantly higher in 1992 than it was in 1971.

Nine-year-olds in the lowest quartile were reading better in 1992 than in 1971. Nevertheless, their performance had not returned to the higher level that was attained in 1980. A somewhat similar pattern was observed among 13-year-olds at this lower end of the distribution, in that they had reached a peak in reading achievement with the 1980 assessment that was not subsequently maintained. The 13-year-olds have since dropped back to levels of performance comparable to 1971. Their 17-year-old counterparts, however, had higher average proficiencies in 1992 than in 1971. They displayed increases across the assessments until 1988, although a decline was observed since 1988.

Table 7.1

Trends in Average Reading Proficiency by Quartiles, 1971 to 1992

		AVERAGE PROFICIENCY		
Quartile	**Year**	**Age 9**	**Age 13**	**Age 17**
Upper Quartile	1992	256(0.9)†	303(1.1)†	335(0.9)
	1990	261(1.1)*†	297(0.8)*†	336(1.1)
	1988	259(1.6)†	296(1.0)*	330(1.3)*
	1984	258(0.4)†	296(0.5)*†	331(0.5)*
	1980	255(0.8)	294(0.5)*	327(0.8)*†
	1975	251(0.7)*	296(0.4)*†	334(0.5)
	1971	253(0.5)*	293(0.4)*	332(0.6)
Middle Two Quartiles	1992	212(0.7)	262(0.6)†	293(0.7)†
	1990	209(0.6)*	258(0.5)*	292(0.5)†
	1988	213(0.7)†	258(0.7)*	292(0.7)†
	1984	212(0.3)	258(0.2)*	291(0.3)*†
	1980	218(0.3)*†	260(0.3)†	289(0.4)*
	1975	213(0.3)†	258(0.4)*	288(0.4)*
	1971	211(0.4)	258(0.4)*	289(0.5)*
Lower Quartile	1992	162(1.0)†	212(1.4)	237(1.3)†
	1990	156(1.5)*	214(0.9)	241(1.6)†
	1988	163(1.6)†	217(1.0)*†	246(1.1)*†
	1984	162(0.6)†	214(0.5)	241(0.3)*†
	1980	169(1.0)*†	219(0.7)*†	238(1.0)†
	1975	163(0.5)†	211(0.5)	232(1.0)*
	1971	157(0.7)*	212(0.7)	230(0.8)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. †Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1971 to 1992 by Race/Ethnicity

As depicted in Figure 7.2, the trends in reading achievement for White, Black, and Hispanic students show some similarities and some differences.[49] At ages 13 and 17, average performance for White students increased across the assessments, resulting in 1992 proficiencies being significantly higher than proficiencies in 1971. Although the reading proficiency of White 9-year-old students has declined since 1980, it remained higher than the performance of their counterparts in 1971.

For Black students, the trend results since 1971 indicated substantial increases in average reading achievement across the assessments for all age groups. However, there has been no improvement at any of three ages assessed since 1988. Nine and 13-year-olds were observed to have reached a performance plateau, while 17-year-olds demonstrated a significant decline between 1992 and 1988. Despite the lack of progress in recent assessments, the differences in average reading proficiency between Black students and White students for each age group were narrower in 1992 than in 1971 (see Figure 2 in Executive Summary). In 1992, however, Black students across the three ages were, on average, between 28 to 36 points lower in reading proficiency than White students.

Data for Hispanic students have been collected since the 1975 reading assessment. Since 1984, 17-year-old Hispanic students have continued to outperform their 1975 counterparts. A general trend toward increased proficiency was displayed by these high school students across the assessments. However, little change was observed for 9- and 13-year-old Hispanic students, except for significantly higher average proficiencies among 9-year-olds in 1988, compared to 1975. Differences in reading ability between 17-year-old Hispanic and White students have lessened across the assessments (see Figure 3 in Executive Summary). Nevertheless, in 1992, the average proficiency of Hispanic students at all three ages remained lower than the average proficiency of White students, by 26 to 27 points.

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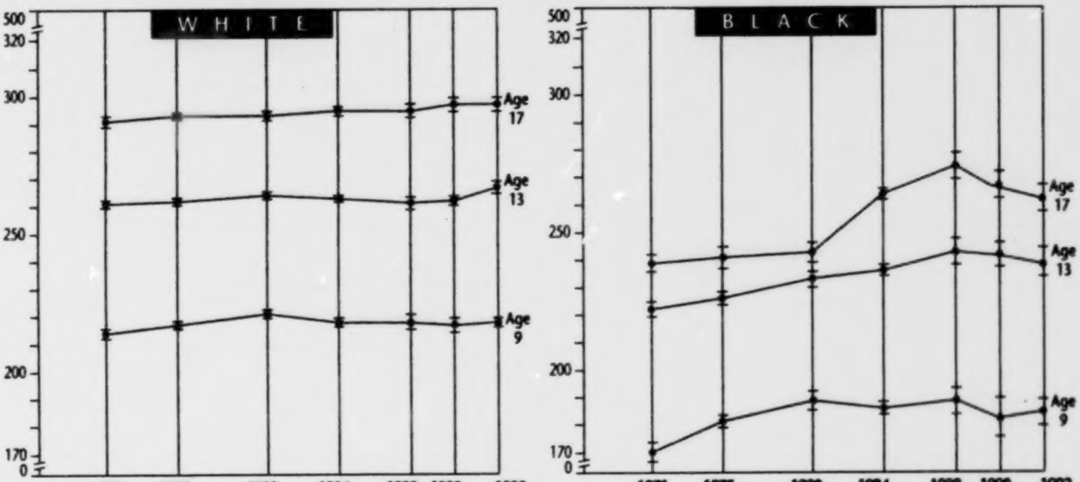
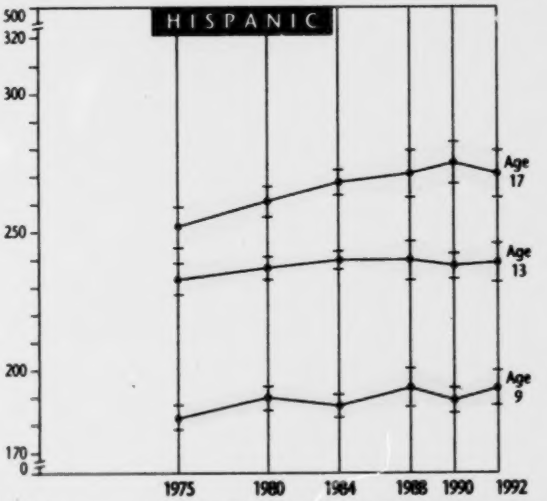
[49] For Asian/Pacific Islander students and American Indian students, the sample sizes were insufficient to permit robust trend estimates.

FIGURE 7.2

Trends in Average Reading Proficiency by Race/Ethnicity, 1971 to 1992



	1971	1975	1980	1984	1988	1990	1992	1971	1975	1980	1984	1988	1990	1992
Age 17	291(1.0)* 87(1.3)*	293(0.6)* 84(1.0)*	293(0.9)* 83(1.6)*	295(0.7)† 77(0.6)*†	295(1.2) 77(0.6)†	297(1.2)† 74(0.5)†	297(1.4)† 75(0.6)†	239(1.7)* 11(1.2)*	241(2.0)* 11(0.8)*	243(1.8)* 12(1.4)	264(1.0)† 14(0.2)	274(2.4)*† 15(0.3)†	267(2.3)† 16(0.3)*†	261(2.1)† 15(0.3)†
Age 13	261(0.7)* 84(1.4)*	262(0.7)* 81(1.2)*	264(0.7)† 80(1.8)*	263(0.6)* 77(0.6)*†	261(1.1)* 76(0.7)*†	262(0.9)* 74(0.8)†	266(1.2)† 73(0.7)†	222(1.2)* 14(1.4)	226(1.2)* 13(0.9)*	233(1.5)† 14(1.3)	236(1.0)† 14(0.2)*	243(2.4)† 15(0.3)	242(2.2)† 15(0.2)	238(2.3)† 16(0.4)
Age 9	214(0.9)* 84(1.4)*	217(0.7) 80(1.2)*	221(0.8)*† 79(1.3)*†	218(0.8)† 75(1.2)†	218(1.4) 75(1.0)†	217(1.3) 74(1.0)†	218(1.0)† 74(0.9)†	170(1.7)* 14(1.3)	181(1.2)† 13(0.8)	189(1.8)† 14(1.0)	186(1.1)† 16(0.5)	188(2.4)† 16(0.7)	182(2.9)† 16(0.6)	184(2.2)† 16(0.4)



	1975	1980	1984	1988	1990	1992
Age 17	252(3.6)* 3(0.6)*	261(2.7) 4(0.6)*	268(2.2)† 7(0.7)†	271(4.3)† 6(0.5)†	275(3.6)† 7(0.4)†	271(3.7)† 8(0.6)†
Age 13	232(3.0) 5(0.8)*	237(2.0) 6(1.0)	240(1.7) 7(0.7)	240(3.5) 6(0.6)	238(2.3) 8(0.5)†	239(3.5) 7(0.4)†
Age 9	183(2.2) 5(0.8)	190(2.3) 6(0.8)	187(2.1) 7(1.4)	194(3.5)† 6(1.0)	189(2.3) 6(0.6)	192(3.1) 7(0.8)

⊥ 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1971 to 1992 by Gender

As shown in Figure 7.3, the average proficiency of 9- and 17-year-old males was significantly higher in 1992 than the average proficiency of their counterparts in 1971. However, at age 17, performance of male students leveled off after a pattern of increases during the 1970s and '80s. At age 9, despite the overall gain from male students between 1992 and 1971, the upward trend of the 1970s was not maintained over subsequent assessments. Among female students, 13-year-olds demonstrated a trend toward more proficient reading across the assessments with average proficiencies in 1992 being significantly higher than average proficiencies in 1971. Although 9-year-old female students had higher performance in 1980 than in 1971, their average proficiency in 1992 has returned to essentially the same level as in 1971. Seventeen-year-old female students had higher average proficiency in 1990 compared to 1971. While their performance in 1992 was relatively similar to 1990, it did not continue to be significantly higher than the first assessment.

Consistent with other studies documenting differences between males and females in literacy development, the NAEP trend assessments revealed a continued disparity favoring female students.[50] Furthermore, the trend data indicated that the differences between the genders have remained constant across the seven assessments — females have consistently outperformed their male counterparts (see Figure 4 in Executive Summary).

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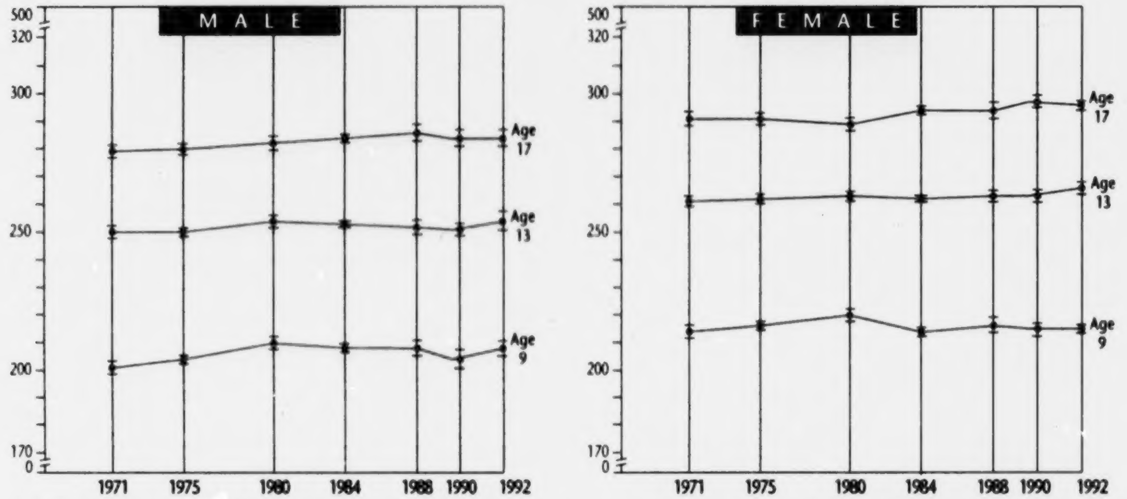
[50] Mullis, I. V. S., Campbell, J. R., & Farstrup, A. E. *NAEP 1992 Reading Report Card for the Nation and the States*, (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Plewis, I., "Pupils' Progress in Reading and Mathematics During Primary School: Associations with Ethnic Group and Sex" *Educational Research*, 33, 133-140 (Summer, 1992).

FIGURE 7.3

Trends in Average Reading Proficiency by Gender, 1971 to 1992



	1971	1975	1980	1984	1988	1990	1992
Age 17	279(1.2)* 49(0.5)*	280(1.0) 49(0.5)*	282(1.3) 50(0.6)	284(0.6)† 51(0.7)	286(1.5)† 48(1.3)*	284(1.6) 50(0.6)	284(1.6)† 52(0.9)†
Age 13	250(1.0) 50(0.4)	250(0.8) 50(0.5)	254(1.1)† 49(0.3)	253(0.6)† 51(0.5)	252(1.3) 50(0.8)	250(1.1) 50(0.9)	254(1.7) 49(0.9)
Age 9	201(1.1)* 50(0.4)	204(0.8) 50(0.4)	210(1.1)† 50(0.4)	208(0.8)† 50(0.5)	208(1.4)† 50(0.8)	204(1.7) 51(0.9)	206(1.3)† 51(0.7)

1971	1975	1980	1984	1988	1990	1992
291(1.3) 51(0.5)*	291(1.0)* 51(0.5)*	289(1.2)* 50(0.6)	294(0.8) 49(0.7)	294(1.5) 52(1.4)	296(1.2)† 50(0.6)	296(1.1) 48(0.9)†
261(0.9)* 50(0.4)	262(0.9) 50(0.5)	263(0.9) 51(0.3)	262(0.6) 49(0.5)	263(1.0) 50(0.8)	263(1.1) 50(0.9)	265(1.2)† 51(0.9)
214(1.0) 50(0.4)	216(0.8) 50(0.4)	220(1.1)*† 50(0.4)	214(0.8) 50(0.5)	216(1.3) 50(0.8)	214(1.2) 49(0.9)	215(0.9) 49(0.7)

● 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

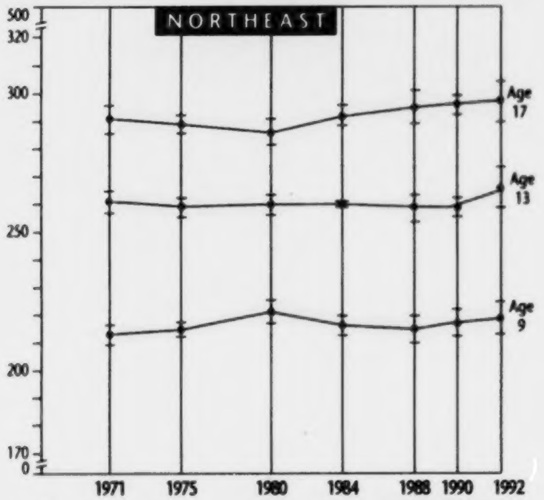
Trends in Reading Proficiency from 1971 to 1992 by Region

Figure 7.4 presents trends in reading achievement for students from the Northeast, Southeast, Central, and Western regions of the country. In general, the reading performance of students in the Northeast has shown little change across the assessments. However, a pattern of decreasing proficiencies for 17-year-olds during the 1970s seems to have reversed and a positive upturn is indicated by the trend data from 1980 through 1992.

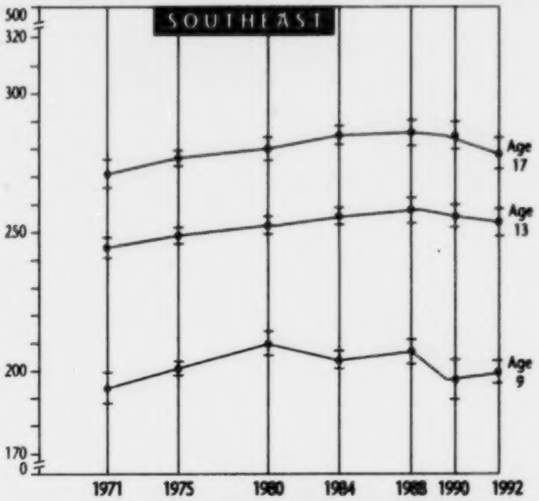
Thirteen-year-olds from the Southeast were reading significantly better in 1992 than they were in 1971, although the upward trend from 1971 through 1988 has leveled off since then. Also, increased performance was observed across the assessments between 1971 and 1988 for 17-year-old students, but their performance has leveled off as well. Nine-year-olds in the Southeast had lower average proficiency in 1992 than they had attained in 1988, resulting in a return to the reading performance levels of 1971. In addition, 9- and 17-year old students from the Southeast had lower average proficiencies than their counterparts in the rest of the country, and 13-year-olds from the Southeast had lower average proficiencies than 13-year-olds from the Northeast.

For students in the Central region, reading ability has remained relatively constant across the seven assessments with no indication of significant change. These students had not yet reached a level of performance that was significantly higher than that of their peers in 1971. At age 9, students in the West had higher average achievement in 1980 than in 1971, but their performance in recent assessments did not differ from the 1971 level.

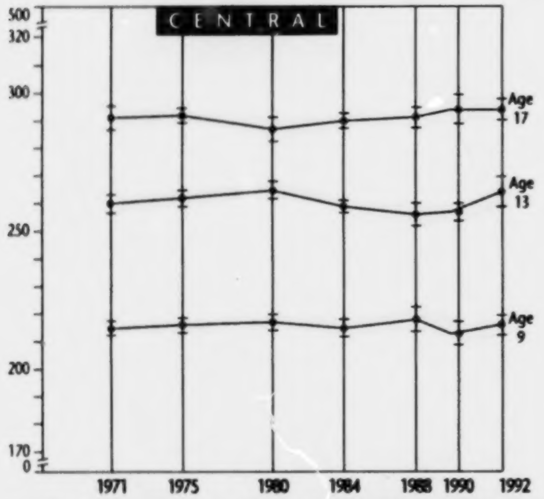
FIGURE 7.4
Trends in Average Reading Proficiency by Region, 1971 to 1992



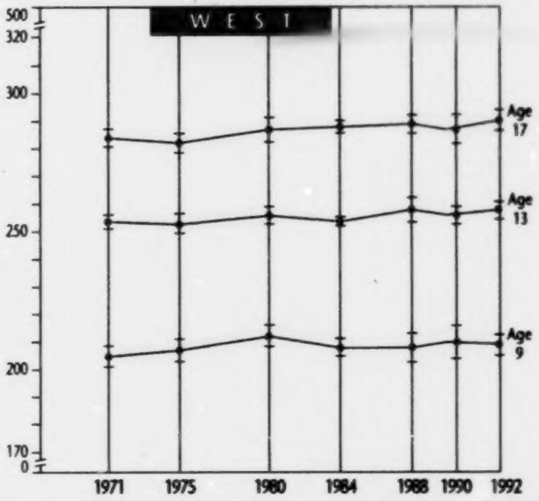
	1971	1975	1980	1984	1988	1990	1992
Age 17	291(2.8) 26(1.9)	289(1.7) 25(1.2)	286(2.4)* 22(2.9)	292(1.9) 24(0.4)*	295(2.9) 23(0.8)	296(1.8) 23(1.1)	297(3.2) 22(0.9)
Age 13	261(2.0) 24(1.5)	258(1.8) 25(1.1)	260(1.8) 24(2.2)	260(0.6) 23(0.4)	259(2.4) 23(2.2)	259(1.8) 23(1.0)	265(3.2) 22(0.8)
Age 9	213(1.7) 26(1.5)	215(1.3) 27(1.1)*	221(2.1)† 23(2.1)	216(1.7) 22(0.4)†	215(2.6) 22(1.5)	217(2.2) 22(1.1)	218(2.6) 21(1.3)



	1971	1975	1980	1984	1988	1990	1992
	270(2.4) 20(1.8)	276(1.4) 20(0.8)*	280(2.2)† 21(1.9)	285(1.6)† 22(1.8)	286(2.1)† 23(1.0)	285(2.5)† 23(0.9)	278(2.9) 25(1.4)
	245(1.7)* 24(2.2)	249(1.5) 22(1.1)	253(1.6)† 24(2.7)	256(1.5)† 23(1.7)	258(2.2)† 24(1.4)	256(2.2)† 23(0.8)	254(2.5)† 23(1.6)
	194(2.9) 22(1.7)	201(1.2) 22(0.8)	210(2.3)*† 24(2.3)	204(1.6)† 24(1.2)	207(2.1)*† 25(1.7)	197(3.2) 24(1.2)	199(2.0) 23(1.4)



	1971	1975	1980	1984	1988	1990	1992
Age 17	291(2.1) 30(2.4)	292(1.4) 30(1.2)*	287(2.2) 28(3.2)	290(1.4) 27(1.7)	291(1.9) 26(1.8)	294(2.4) 27(1.0)	294(2.1) 24(0.8)
Age 13	260(1.8) 29(2.2)	262(1.4) 28(1.3)	264(1.4) 26(3.5)	259(1.0) 27(1.6)	256(2.0) 26(2.0)	257(1.5) 24(0.7)	264(3.0) 26(1.0)
Age 9	215(1.2) 29(2.0)	215(1.2) 26(1.2)	217(1.4) 25(3.4)	215(1.5) 27(1.3)	218(2.2) 24(0.6)*	213(2.0) 25(0.7)	216(1.6) 28(1.1)



	1971	1975	1980	1984	1988	1990	1992
	284(1.8) 24(2.4)	282(1.9)* 25(1.1)*	287(2.1) 28(2.3)	288(1.1) 26(0.6)	289(1.8) 28(1.1)	287(2.6) 28(0.9)	290(2.3) 29(1.0)
	254(1.3) 23(2.3)	253(1.7) 26(1.1)	256(2.0) 26(2.3)	254(0.9) 27(0.5)	258(2.1) 28(1.0)	256(1.6) 30(0.9)	258(1.6) 29(1.2)
	205(2.0) 23(1.9)	207(2.0) 25(1.1)	213(1.8)† 28(2.1)	208(1.5) 28(0.5)†	208(2.6) 28(1.1)†	210(2.8) 28(0.8)†	209(2.3) 27(0.9)

95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1971 to 1992 by Type of Community

Trends in average reading achievement for students living in advantaged urban, disadvantaged urban, extreme rural, and other communities are presented in Table 7.2. Various patterns of change are evident across the different types of communities. In 1992, 9- and 13-year-old students from advantaged urban communities demonstrated more proficient reading than their peers in 1988.

Recent documentations of discrepancies in learning opportunities for students from communities with fewer resources have focused attention on the impact of environmental and social contexts within which schooling occurs.[51] For this reason, trends in the reading proficiency of students from disadvantaged comunities may be of particular interest to educators and policymakers. Among 9-year-old students from disadvantaged communities, there were indications that performance has begun to decline. These 9-year-olds attained significantly higher performance in 1984 compared to 1971, but demonstrated no significant increase in 1992 over 1971. The performance of 17-year-olds from disadvantaged communities increased between 1971 and 1988, but was not significantly higher in 1992 compared to 1971.

For students from extreme rural communities, no significant gains were observed in 1992. Compared to 1971 reading proficiency, nine-year-olds had higher proficiency in 1980, 13-year-olds were performing better in 1988, and 17-year-olds were more proficient in 1990. Displaying a different pattern, students in communities identified as "other" had significantly higher performance in 1992 than in 1971. In addition, 13-year-olds outperformed their peers in 1984, and the 17-year-olds did better than their counterparts in 1980 and 1975.

A consistent pattern observed in 1992 was the higher average achievement of students at all ages from advantaged urban areas compared to students from disadvantaged urban, extreme rural, and other communities. At age 17, however, the difference was not significant between students from "other" communities and those from advantaged urban communities. Students from disadvantaged urban communities demonstrated the lowest proficiency across the three ages compared to all other communities.

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[51] Kozol, J., *Savage Inequalities: Children in America's Schools.* (New York NY: Harper Perennial, 1991).

O'Day, J.A., Smith, M.S., "Systemic Reform and Educational Opportunity." In S. Fuhrman, *Designing Coherent Policy: Improving the System* (San Francisco, CA: Jossey-Bass, 1993).

Table 7.2

Trends in Average Reading Proficiency by Type of Community, 1971 to 1992

Type of Community	Year	AGE 9		AGE 13		AGE 17	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Advantaged Urban	1992	10(1.9)	234(2.8)	11(2.0)	281(2.9)	10(1.8)	303(3.9)
	1990	11(2.1)	227(3.3)	12(2.1)	270(3.2)	10(1.6)	300(3.8)
	1988	16(3.2)	222(2.7)*	13(3.5)	266(3.3)*	16(4.0)	301(1.8)
	1984	13(1.9)	231(1.7)	10(2.3)	274(2.2)	16(2.7)	302(2.2)
	1980	14(2.6)	232(1.4)	13(2.0)	277(1.4)	15(3.4)	301(2.2)
	1975	11(1.5)	227(1.5)	12(2.0)	273(1.4)	10(1.3)	305(1.5)
	1971	12(1.9)	230(1.3)	12(1.7)	273(1.4)	14(2.6)	306(2.0)
Disadvantaged Urban	1992	9(1.9)	184(3.9)	11(1.5)	231(4.3)	12(1.8)	267(3.2)
	1990	10(2.7)	186(4.7)	10(1.8)	241(3.2)	8(2.1)	273(4.8)
	1988	7(2.2)	192(5.5)	7(2.1)	239(3.0)	1(0.6)*†	275(2.6)†
	1984	12(1.9)	192(1.6)†	9(1.5)	239(1.9)	10(2.2)	266(2.1)
	1980	6(1.1)	188(2.1)	10(2.1)	242(3.8)	9(2.0)	258(3.0)
	1975	8(1.1)	184(2.5)	8(1.0)	230(2.7)	11(1.5)	259(4.2)
	1971	8(1.1)	179(2.7)	7(1.3)	234(1.7)	8(1.7)	260(2.6)
Extreme Rural	1992	11(2.9)	206(2.9)	10(1.9)	257(3.0)	10(2.2)	285(2.6)
	1990	9(1.8)	209(4.5)	8(2.4)	251(4.7)	13(2.0)	290(3.4)†
	1988	10(2.3)	214(4.2)	6(2.0)	262(2.9)†	7(2.7)	287(5.2)
	1984	7(1.2)	201(3.4)	5(1.1)	255(1.9)	5(1.1)	283(3.2)
	1980	9(1.8)	212(1.7)†	9(1.4)	255(1.9)	8(1.6)	279(3.2)
	1975	8(1.0)	204(2.5)	8(1.0)	248(2.1)	9(1.4)	282(2.6)
	1971	9(1.2)	200(3.3)	10(1.5)	247(2.7)	9(1.4)	277(3.4)
Other	1992	70(3.9)	212(1.1)†	69(3.0)	261(1.4)†	68(3.2)	293(1.3)†
	1990	70(4.2)	210(1.5)	70(3.3)	258(0.9)	69(3.3)	291(1.2)†
	1988	67(4.7)	211(1.4)	73(4.6)	257(1.2)	76(4.7)	288(1.1)
	1984	68(2.5)	212(0.8)†	76(2.9)	257(0.6)*	69(3.3)	290(0.6)†
	1980	71(3.1)	214(1.1)†	69(3.1)	258(0.9)	67(3.9)	287(1.0)*
	1975	73(1.8)	211(0.8)	72(2.1)	257(0.9)	70(2.3)	288(0.9)*
	1971	72(2.1)	208(1.1)*	71(2.6)	255(0.8)*	69(2.8)	285(1.0)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends In Reading Proficiency from 1971 to 1992 by Parents' Highest Level of Education

Recent concern for the literacy development of "at-risk" students, those students who may be especially challenged in their educational pursuits, has focused attention on family and environmental influences.[52] One important indicator of the nature of children's literacy environment may be the level of their parents' education.

It is perhaps noteworthy that there has been a steady decline since 1971 in the percentage of students at all ages who reported that their parents had not finished high school. A corresponding increase was observed in the percentage of students at all ages who reported that at least one of their parents had pursued post-high school education. In 1992, across the three ages, students with parents who had pursued post-high school education had higher average proficiency than did students whose parents had less education.

Table 7.3 presents trends in average proficiency by parents' highest level of education. Very few changes in average proficiency were observed for students whose parents had not finished high school. Mixed trends were noted for students whose parents had graduated from high school. Nine-year-olds in this group did not perform as well in 1992 as their peers did in 1980, when a significant increase had been attained over 1971 performance. Essentially, these students have returned to the level of average proficiency demonstrated in 1971. At the same time, a downward trend was seen in the data for 13-year-olds whose parents graduated from high school (see Data Appendix). Seventeen-year-olds in this group showed little change except for a dip in 1980.

Some change was noted in the reading proficiency of students with parents who had pursued post-high school education. For 9-year-olds in this group, 1992 reading proficiency was significantly lower than that of their peers in 1980, and 1990 performance was significantly lower than 1971. At age 13, reading proficiency in 1988 and 1990 was significantly lower than in 1971. No significant differences between assessments were observed for 17-year-olds.

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[52] Langer, J. (Ed.) *Language, Literacy and Culture: Issues of Society and Schooling*. (Norwood, NJ: Ablex, 1987).

Snow, C., Barnes, W., Chandler, J., Godman, I., & Hemphill, L., *Unfulfilled Expectations: Home and School Influences on Literacy*. (Cambridge, MA: Harvard University Press, 1991).

Table 7.3

Trends in Average Reading Proficiency by Parents' Highest Level of Education, 1971 to 1992

		AGE 9		AGE 13		AGE 17	
Level of Education	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Post High School	1992	45(0.9)†	220(1.4)	57(1.6)†	270(1.4)	61(1.4)†	299(1.4)
	1990	42(1.3)†	218(2.0)†	50(1.5)*†	267(1.0)†	58(1.3)†	300(1.1)
	1988	45(1.4)†	220(1.7)	52(1.5)†	265(1.4)†	58(1.6)†	300(1.3)
	1984	37(1.0)*†	223(0.9)	46(1.1)*†	268(0.7)	50(1.2)*†	301(0.7)
	1980	40(1.5)*†	226(1.1)*	49(1.3)*†	271(0.8)	51(1.3)*†	299(1.0)
	1975	34(0.7)*	222(0.9)	40(0.9)*	270(0.8)	46(0.8)*†	301(0.7)
	1971	33(0.9)*	224(1.1)	38(1.1)*	270(0.8)	42(1.3)*	302(1.0)
Graduated High School	1992	16(0.8)†	207(1.5)	28(1.2)	252(1.7)	28(0.9)	280(1.6)
	1990	17(0.8)†	209(1.8)	31(1.2)	251(0.9)†	30(1.0)	283(1.4)
	1988	16(0.6)†	211(2.2)	31(1.0)	253(1.2)	30(1.2)	282(1.3)
	1984	20(0.6)*†	209(1.0)	36(1.0)*†	253(0.7)	35(1.0)*†	281(0.7)
	1980	25(0.8)*†	213(1.3)*†	31(0.7)	254(0.9)	32(0.9)*	278(1.0)†
	1975	24(0.4)*	211(0.9)	33(0.6)*	255(0.7)	34(.05)*	281(1.1)
	1971	22(0.5)*	208(1.2)	32(0.7)	256(0.8)	31(0.8)	283(1.2)
Less than High School	1992	5(0.4)†	195(4.5)	6(0.5)†	239(2.6)	8(0.8)†	271(3.9)
	1990	5(0.5)†	193(3.2)	8(0.6)†	241(1.8)	9(0.6)†	270(2.8)†
	1988	5(0.6)†	192(4.9)	8(0.6)†	246(2.1)†	9(0.8)†	267(2.0)
	1984	6(0.2)†	195(1.4)†	9(0.4)*†	240(0.9)	12(0.6)*†	269(1.1)†
	1980	6(0.5)†	194(1.6)†	10(0.6)*†	238(1.1)	13(0.7)*†	262(1.5)
	1975	10(0.4)*	190(1.3)	14(0.6)*†	239(1.2)	16(0.6)*†	262(1.3)
	1971	10(0.4)*	189(1.5)	16(0.6)*	238(1.3)	20(0.8)*	261(1.5)
I Don't Know	1992	34(1.3)	204(1.2)	9(0.5)†	236(2.6)	3(0.3)†	255(5.9)
	1990	36(1.1)	201(1.5)	11(0.6)†	238(1.9)	3(0.3)†	246(5.7)
	1988	34(1.3)	204(1.5)†	9(0.7)†	240(3.0)	2(0.3)†	255(6.2)
	1984	38(0.9)	204(0.7)†	10(0.4)†	236(1.3)	3(0.2)†	256(2.0)
	1980	28(1.0)*†	206(1.0)†	10(0.7)†	233(1.7)	4(0.4)†	250(3.5)
	1975	32(0.8)	203(0.8)†	13(0.6)*	235(1.1)	4(0.2)*†	240(2.8)†
	1971	35(0.7)	197(1.0)	14(0.8)*	233(1.0)	7(0.8)*	261(5.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. †Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Data for students with parents who graduated from college was not available for the Reading Trend Assessments. Percentages of students do not total 100 percent because about one-third of the students at age 9 and smaller percentages at ages 13 and 17 reported that they did not know the education level of either parent.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1980 to 1992 by Type of School

Students' average reading proficiency by type of school attended is shown in Table 7.4. Because 1980 was the first year in which private school results were available, trend information by type of school is not available before 1980. Several significant changes are revealed in the data for students attending public and private schools. Nine-year-old public school students were reading with less proficiency in 1992, 1990, and 1984 than were their counterparts in 1980. Seventeen-year-old students attending public schools had increasing reading performance during the 1980s, but have levelled off since 1988. In fact, 1992 proficiency was not statistically different from 1980. Between 1980 and 1992, performance has been quite stable for 9- and 13-year-olds attending private schools. At age 17, average proficiency was significantly higher in 1990 than 1980. In 1992, performance was comparable to the 1990 level. In 1992, students at all three ages from private schools demonstrated higher average proficiency than students from public schools.

Table 7.4

Trends in Average Reading Proficiency by Type of School, 1980 to 1992

		AGE 9		AGE 13		AGE 17	
Type of School	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Public	1992	88(1.7)	209(1.0)†	86(1.9)	257(1.3)	92(1.9)	288(1.0)
	1990	92(1.9)	208(1.4)†	88(1.9)	255(0.8)	93(1.5)	289(1.1)†
	1988	88(2.7)	210(1.2)	89(2.5)	256(1.0)	88(3.5)	289(1.0)†
	1984	87(1.7)	209(0.8)†	88(1.1)	255(0.6)	89(1.7)	287(0.6)
	1980	89(1.4)	214(1.1)*	88(1.3)	257(1.1)	93(1.2)	284(1.2)
Private	1992	12(1.7)	225(2.3)	14(1.9)	276(2.6)	8(1.9)	310(4.2)
	1990	8(1.9)	228(3.3)	12(1.9)	270(2.9)	7(1.5)	311(4.2)†
	1988	12(2.7)	223(3.0)	11(2.5)	268(2.8)	12(3.5)	300(3.8)
	1984	13(1.7)	223(1.6)	12(1.1)	271(1.7)	11(1.7)	303(2.0)
	1980	11(1.4)	227(1.8)	12(1.3)	271(1.5)	7(1.2)	298(2.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. †Statistically significant difference from 1980, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Proficiency from 1971 to 1992 by Modal Grade

The percentages of students above, at, and below modal grade, and their average reading proficiencies, are presented in Table 7.5. At all three ages, significantly more students were below modal grade in 1992 than in 1971. Corresponding to this increase in the proportion of students below the modal grade was a significant decrease across all the age groups in percentages of students at the modal grade. In addition, there were significant decreases for 9- and 17-year-olds in the percentage of students who were above modal grade in 1992 compared to 1971. The reading proficiency of all students who were at or below modal grade was higher in 1992 compared to the proficiency of their counterparts in 1971. A similar increase in reading proficiency was observed for 13-year olds students above the modal grade.

The factors that have brought about this change in the modal grade of 9-, 13-, and 17-year-olds have been the focus of numerous studies. Some studies have documented the increase of entrance age requirements for kindergarten classes in many school systems and states. In many cases, this has been done to increase the potential for success in school for young children.[53] However, there appears to be conflicting research in this area, indicating perhaps some positive and some negative results of such practices.[54]

Although a greater percentage of 9-, 13- and 17-year-olds were below modal grade in 1992 compared to 1971, the overall reading proficiency for 13- and 17-year-olds for the nation had increased during the same period. Nine-year-olds did not display the same pattern, however, as their overall reading proficiency in 1992 was not significantly different from 1971, and in fact was lower in 1992 than in 1980.

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[53] Nurss, J. R. *Readiness for Kindergarten*. ERIC Digest, Office of Educational Research and Improvement. (Washington DC: Government Printing Office, 1987).

[54] DeMeis, J. L., & Stearns, E. S., "Relationship of School Entrance Age to Academic and Social Performance," *Journal of Educational Research, 81*, 20-27, 1992.

Shepard, L. A., & Smith, M. L. "Escalating Academic Demand in Kindergarten: Counterproductive Policies" *Elementary School Journal, 89*, 135-145, 1988.

Table 7.5

Trends in Average Reading Proficiency by Modal Grade

		AGE 9		AGE 13		AGE 17	
Modal Grade	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Below Modal Grade	1992	43(0.5)†	192(1.4)†	43(0.7)†	243(1.9)†	28(0.6)†	261(1.5)†
	1990	42(0.5)†	189(1.8)†	39(0.4)*†	243(1.1)†	26(0.6)†	261(1.9)†
	1988	37(0.3)*†	193(1.8)†	39(0.5)*†	243(1.4)†	24(1.2)*†	265(1.9)†
	1984	34(0.3)*†	187(0.9)*†	37(0.2)*†	239(0.7)†	22(0.7)*†	259(0.9)†
	1980	28(1.5)*	189(1.3)†	28(1.2)*	240(1.5)†	14(0.7)*	244(2.1)*
	1975	23(0.8)*	183(1.1)*†	28(0.9)*	232(0.9)*	15(0.7)*	242(1.8)*
	1971	24(0.8)*	178(1.2)*	28(0.9)*	230(1.0)*	14(0.6)*	238(1.5)*
At Modal Grade	1992	57(0.5)†	224(1.0)†	56(0.5)†	272(1.1)†	64(0.2)†	301(1.3)†
	1990	58(0.5)†	224(1.5)†	60(0.2)*†	266(0.9)*	65(0.2)*†	299(1.0)†
	1988	63(0.3)*†	223(1.5)†	60(0.3)*†	267(1.1)*	65(0.2)*†	296(1.1)*†
	1984	65(0.2)*†	223(0.8)†	62(0.2)*†	267(0.5)*	68(0.2)*†	296(0.6)*†
	1980	71(1.4)*	225(0.8)†	70(1.3)*	266(0.8)*	77(0.6)*†	291(1.0)*
	1975	75(0.9)*	218(0.7)*	72(0.9)*	265(0.7)*	73(0.7)*	292(0.7)*
	1971	74(0.8)*	217(1.1)*	71(0.9)*	265(0.8)*	73(0.7)*	291(1.0)*
Above Modal Grade	1992	0(0.1)†	243(16.7)	1(0.6)	312(3.9)†	8(0.6)†	300(3.2)
	1990	0(0.1)†	242(20.1)	0(0.3)	290(16.0)	9(0.6)†	310(2.3)
	1988	0(0.2)	262(11.0)	1(0.5)	272(10.8)*	12(1.3)*	305(3.0)
	1984	0(0.1)†	254(4.7)†	1(0.2)†	294(7.5)	10(0.7)†	304(1.2)
	1980	0(0.1)†	243(6.1)	0(0.1)†	274(4.9)*	9(0.6)†	300(1.7)
	1975	0(0.1)*†	226(4.3)	1(0.1)	278(4.2)*	12(0.4)*	302(1.0)
	1971	1(0.1)*	232(4.1)	1(0.2)	278(2.4)*	13(0.7)*	302(1.6)

* Statistically significant difference from 1992 at about the 95 percent confidence level. †Statistically significant difference from 1984 at about the 95 percent confidence level. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Summary

A mixture of encouraging results and reasons for some concern seems apparent from the seven NAEP reading trend assessments conducted between 1971 and 1992. Overall growth was seen in reading proficiency for 13- and 17-year-olds since 1971, with some levelling off in the performance of 17-year-olds. However, 9-year-olds in 1992 demonstrated about the same reading ability as their counterparts did in 1971, despite significant gains that had been made between 1971 and 1980.

The overall patterns of change varied across the proficiency distributions for each age group. While 9-year-olds in the top and bottom quartiles of the distribution were more proficient in 1992, compared to 1971 those in the middle two quartiles showed no difference from the first assessment, and in fact had declined since 1980 (as did those in the lowest quartiles). For 13-year-olds, overall gains were seen only for students in the top and middle of the distribution. In recent assessments, 13-year-olds in the low end of the distribution failed to maintain gains they had made in 1980 to 1988, compared to 1971, thus returning to performance equivalent to 1971. At age 17, middle- and lower-end students had proficiencies higher in 1992 than in 1971, while average performance for the top performing students returned to the level exhibited in 1971, after declining significantly in 1980.

White students in each of the three age groups assessed demonstrated higher reading achievement than in 1971. Although Black students also displayed higher average proficiencies in 1992 compared to 1971, 17-year-olds dropped in their performance since 1988. The reading ability of Hispanic students has remained relatively unchanged since 1975, except for 17-year-olds, who had higher average proficiency in 1992. While 9-year-old Hispanic students in 1988 outperformed their 1975 counterparts, there was no statistical difference between their 1992 and 1975 performances. The discrepancy between White and Black students' reading proficiencies did lessen since 1971 at all three ages. This was true also for 17-year-old White and Hispanic students since 1975. While some narrowing of the gap in reading proficiency between White students and their Black and Hispanic counterparts did occur across the assessments, White students continued to have the highest average proficiencies at all three age groups.

Except at age 9, the average reading proficiency of female students has generally improved across the assessments. Nine- and 17-year-old males were reading better in 1992 than they were in 1971. However, there has been no change in the disparity of performance that characterizes the two groups, with females consistently outperforming males.

In the Northeast, the proficiency of 17-year-olds was significantly higher in 1992 than in 1980, but no different from 1971. Thirteen-year-olds from the Southeast were reading significantly better in 1992 than they were in 1971. Nine-year-olds displayed few significant changes except in the Southeast, where average proficiency was significantly lower in 1992 compared to 1988 and 1980. These students had essentially returned to levels of performance in 1992 that were comparable to 1971 levels. Similarly, gains that had been made by 9-year-olds from the Northeast and West in 1980 were not maintained across the subsequent assessments resulting in no difference between 1992 and 1971 levels of proficiency. Students from the Southeast had the lowest average proficiencies in 1992 compared to the other three regions at ages 9 and 17. Thirteen-year-olds from the Southeast had lower average proficiency than 13-year-olds from the Northeast.

The downward turn in reading ability for 9-year-olds since 1980 observed for the nation was evident among students attending public schools. Gains in reading achievement were observed for all students from communities identified as "other."

Overall, the trends in reading achievement are encouraging for many of the country's 13- and 17-year-olds, and some groups of 9-year-old students. However, there is also cause for concern, since many of the advancements in performance that had been made in earlier years among Black students, as well as among 9-year-olds from disadvantaged urban communities, have not continued — or have reversed. Moreover, significant gaps in performance continue to exist between racial/ethnic subgroups and between male and female students. In the case of racial/ethnic differences, trends toward some narrowing of the gap observed in earlier assessments have stalled since 1988 at all three ages assessed. Gender gaps favoring female students were essentially the same in 1992 as in 1971.

8

National Trends in Levels of Reading Proficiency from 1971 to 1992

This chapter expands on the discussion of students' average proficiency presented in Chapter Seven by focusing on trends in levels of reading proficiency across the seven reading assessments. To provide more specific information about the types of reading abilities displayed by students, five levels of proficiency have been identified and described along the NAEP scale — 150, 200, 250, 300, and 350. The procedure for describing or "anchoring" performance at the five levels on the scale involved an empirical process that delineated sets of items and passages more likely to be answered successfully by students whose overall performance was at a particular anchor level and much less likely to be answered successfully by students performing at the next lower level.[55]

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[55] In theory, proficiency levels above 350 or below 150 could have been defined; however, so few students in the assessment performed at the extreme ends of the scale that it was not practical to do so.

A panel of reading experts analyzed the sets of items and passages that "anchored" at each of the five scale levels, carefully considering the various reading processes and skills required to answer the questions, and the degree of understanding demonstrated by students' responses. In conducting their analyses, the panelists considered how the interaction between characteristics of the text, the students' background knowledge, and the type of question asked affected students' abilities to gain meaning from the text and to demonstrate their understanding.

A general finding from the analyses was that most students could read and understand uncomplicated, short passages consisting of a few simple sentences. As passages became more complex, with less familiar narrative or expository structures, students experienced more difficulty, particularly at age 9. Also, the familiarity of the topic played an important role in students' ability to understand, with general, "everyday" topics being easier than more specialized subject matter.

The nature of the tasks in the assessment ranged from identifying facts in a passage and inferring meaning, to connecting, interpreting, and extending ideas across the text. It was clear that the complexity of the passages, as well as the nature of the tasks, had an impact on students' success with the questions. In some instances, students could make generalizations about ideas within short simple passages, while in other cases, they had more difficulty answering questions about facts that were embedded in rather dense texts. Furthermore, it was apparent that constructing their own responses was more difficult for students than selecting a response among options in a multiple-choice question. This was particularly true when the constructed-response question asked students to provide an interpretation of information in the text.

These findings are consistent with other research suggesting that the nature of the text and students' competencies with various reading processes influence their ability to understand certain texts.[56] A wide range of reading abilities and interactions with text are portrayed across the five levels of performance on the NAEP scale. The descriptions of reading proficiency in Figure 8.1 characterize the reading abilities of most students at each of the five levels.

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[56] McKeown, M. G., Beck, I. L., Sinatra, G. M. & Loxterman, J. A., "The Contribution of Prior Knowledge and Coherent Text to Comprehension." *Reading Research Quarterly,* 27, 78-93 (1992).

Dole, J. A., Duffy, G. C. Roehler, L. R., & Pearson, D. P., "Moving From the Old to the New: Research on Reading Comprehension Instruction," *Review of Educational Research*, 61(2), 239-264 (1991).

Figure 8.1 — Levels of Reading Proficiency

Level 350: Learn from Specialized Reading Materials

Readers at this level can extend and restructure the ideas presented in specialized and complex texts. Examples include scientific materials, literary essays, and historical documents. Readers are also able to understand the links between ideas, even when those links are not explicitly stated, and to make appropriate generalizations. Performance at this level suggests the ability to synthesize and learn from specialized reading materials.

Level 300: Understand Complicated Information

Readers at his level can understand complicated literary and informational passages, including material about topics they study at school. They can also analyze and integrate less familiar material about topics they study at school, as well as provide reactions to and explanations of the text as a whole. Performance at this level suggests the ability to find, understand, summarize, and explain relatively complicated information.

Level 250: Interrelate Ideas and Make Generalizations

Readers at this level use intermediate skills and strategies to search for, locate, and organize the information they find in relatively lengthy passages and can recognize paraphrases of what they have read. They can also make inferences and reach generalizations about main ideas and author's purpose from passages dealing with literature, science, and social studies. Performance at this level suggests the ability to search for specific information, interrelate ideas, and make generalizations.

Level 200: Partially Developed Skills and Understanding

Readers at this level can locate and identify facts from simple informational paragraphs, stories, and news articles. In addition, they can combine ideas and make inferences based on short, uncomplicated passages. Performance at this level suggests the ability to understand specific or sequentially related information.

Level 150: Simple, Discrete Reading Tasks

Readers at this level can follow brief written directions. They can also select words, phrases, or sentences to describe a simple picture and can interpret simple written clues to identify a common object. Performance at this level suggests the ability to carry out simple, discrete reading tasks.

Table 8.1 presents the percentages of students who performed at or above each reading proficiency level in the seven reading assessments conducted by NAEP since 1971. Across the years, nearly all students demonstrated rudimentary reading abilities by successfully performing simple, discrete reading tasks (Level 150). Only a very small percentage of students in any assessment, however, attained the highest level of performance characterized by the ability to extend, restructure, and synthesize ideas in a wide variety of specialized reading materials (Level 350).

Students' performance on the assessments has been described in terms of a common scale across the three age levels. By doing so, developmental patterns across years of schooling — as well as trend patterns across assessments — can be observed. It is expected that older students will have more success with increasingly difficult reading tasks reflected in the higher performance level descriptions. In fact, this was the case in 1992, as students showed a clear pattern of increased proficiency from ages 9 to 17.

Table 8.1

Trends in Percentages of Students At or Above Five Reading Proficiency Levels, 1971 to 1992

		YEARS						
Skills and Strategies	**Age**	**1971**	**1975**	**1980**	**1984**	**1988**	**1990**	**1992**
LEVEL 350								
Learn from	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.1)	0(0.0)
Specialized	13	0(0.0)	0(0.0)	0(0.0)	0(0.1)	0(0.1)	0(0.1)	1(0.3)
Reading Materials	17	7(0.4)	6(0.3)	5(0.4)†	6(0.3)	5(0.6)*†	7(0.5)	7(0.6)
LEVEL 300								
Understand	9	1(0.1)	1(0.1)	1(0.1)	1(0.1)	1(0.3)	2(0.3)*	1(0.2)
Complicated	13	10(0.5)*	10(0.5)*	11(0.5)*	11(0.4)*	11(0.8)*	11(0.6)*	15(0.9)†
Information	17	39(1.0)*	39(0.8)*	38(1.1)*	40(0.8)	41(1.5)	41(1.0)	43(1.1)†
LEVEL 250								
Interrelate	9	16(0.6)	15(0.6)	18(0.8)	17(0.6)	18(1.1)	18(1.0)	16(0.8)
Ideas and Make	13	58(1.1)	59(1.0)	61(1.1)	59(0.6)	59(1.3)	59(1.0)	62(1.4)
Generalizations	17	79(0.9)*	80(0.7)	81(0.9)	83(0.5)†	86(0.8)*†	84(1.0)†	82(0.8)†
LEVEL 200								
Partial Skills and	9	59(1.0)	62(0.8)†	68(1.0)*†	62(0.7)	63(1.3)	59(1.3)	62(1.1)
Understanding	13	93(0.5)	93(0.4)	95(0.4)†	94(0.3)	95(0.6)	94(0.6)	93(0.7)
	17	96(0.3)	96(0.3)	97(0.3)†	98(0.1)*†	99(0.3)*†	98(0.3)†	97(0.4)
LEVEL 150								
Simple, Discrete	9	91(0.5)	93(0.4)†	95(0.4)*†	92(0.3)†	93(0.7)	90(0.9)	92(0.4)
Reading Tasks	13	100(0.0)	100(0.1)	100(0.1)	100(0.0)	100(0.1)	100(0.1)	100(0.3)
	17	100(0.1)	100(0.1)	100(0.1)†	100(0.0)†	100(0.0)†	100(0.1)	100(0.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1971, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Level 150: Simple, Discrete Reading Tasks

Performance at Level 150 was characterized by the ability to read and understand brief, uncomplicated texts and to answer questions about specific information, such as recalling particular details.

Across the assessments, nearly all 13- and 17-year-old students and the overwhelming majority of 9-year-olds were successful with tasks representative of this level. However, it appears that significant increases between 1971 and 1980 for 9-year-olds attaining Level 150 have not been maintained. Significantly fewer 9-year-old students in 1992 than in 1980 were able to perform the simple, discrete reading tasks associated with this level of performance. In 1992, 8 percent of 9-year-old students had not yet mastered the fundamental reading skills that serve as the foundation for more advanced reading abilities. Some reading researchers and educators have expressed serious concern for the future achievement of students moving through the elementary grades without these essential capabilities.[57]

Level 200: Partially Developed Skills And Understanding

Students performing at Level 200 demonstrated partial use of reading skills and strategies, evidenced by their basic understanding of stories and expository materials, ability to summarize main ideas, and capacity to obtain and understand information from the material presented.

Despite fluctuations, as in past assessments, nearly all of the 17-year-old students in 1992 (97 percent) performed at or above Level 200. Ninety-three percent of 13-year-olds were at or above Level 200 in 1992. Although a slight, but significant increase had been demonstrated by 13-year-olds at this level between 1971 and 1980, the percentage attaining Level 200 in 1992 did not differ from 1971.

Among 9-year-olds, fewer students reached Level 200 in 1992 than in 1980 — 62 compared to 68 percent. Significant increases observed between 1971 and 1980 were eroded across the subsequent assessments.

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[57] Juel, C., "Learning to Read and Write: A Longitudinal Study of Fifty-Four Children From First Through Fourth Grade." *Journal of Educational Psychology, 90*, 437-447 (1988).

Stanovich, K., "Matthew Effect in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy." *Reading Research Quarterly, 21*, 360-406 (1986).

Level 250: Interrelate Ideas and Make Generalizations

The reading passages associated with Level 250 performance tended to be longer and more complex than those at the lower levels, and the questions were more demanding, asking students to interpret, make inferences from, and elaborate on the information and ideas presented.

As in earlier assessments, the proportions of students attaining at least Level 250 in 1992 differed substantially by age — ranging from 16 percent of the 9-year-olds to 82 percent for 17-year-olds.

As in 1984 through 1990, more 17-year-olds reached Level 250 in 1992 than had reached this level in 1971 (82 compared to 79 percent). However, the proportion of students doing so in 1992 was smaller than the 86 percent reaching this level in 1988. In 1992, 62 percent of 13-year-olds and 16 percent of the 9-year-olds performed at or above level 250, representing essentially no change across the seven assessments at either age.

Level 300: Understand Complicated Information

Performance at Level 300 indicates an ability to read and understand a wide variety of texts, including various types of informational and literary passages as well as documents. It also reflects an ability to summarize and elaborate on the information and ideas presented in texts. To a greater extent than at the lower levels of proficiency, the reader performing at this level is attentive to genre, form, and rhetorical features.

Although less than half of 17-year-olds and less than one-fifth of 13-year-olds displayed the more proficient abilities characteristic of this level, some encouraging results are evident in the data. The percentage of 13-year-old students and 17-year-old students performing at or above Level 300 increased from 1971 to 1992 — from 10 percent to 15 percent, and from 39 percent to 43 percent, respectively.

Very few 9-year-old students demonstrated the abilities representative of this level. In 1992, only about 1 percent performed at or above this level, which has been relatively consistent across the assessments since 1971.

Level 350: Learn from Specialized Reading Materials

Performance at the highest level on the NAEP reading proficiency scale reflects the ability to integrate ideas and information presented in a variety of genres, to understand specialized content, and to build meaning from passages that contain challenging syntactic and rhetorical elements. Many of the questions following the passages at this level required students to construct responses that articulated their own views and ideas based on the selection presented.

The percentage of students capable of the more advanced reading abilities continues to be quite small. Only 7 percent of 17-year-old students demonstrated the reading proficiency needed to handle the specialized written materials in the assessment.

The results did indicate a higher percentage of 17-year-olds reaching this level in 1992 than in 1988. Subsequent to a dip in performance between 1971 and 1980, from 7 to 5 percent, performance returned to the original level (7 percent).

An overall consideration of these results reveals some positive indications of increased performance, particularly at level 300 for both ages 13 and 17. For the most part, however, increases that were observed were relatively small and left room for continued growth at all age levels. Perhaps most notably, very small percentages of 17-year-olds approaching the end of their high school education have reached the upper level of reading proficiency defined by NAEP. Also, some erosion was noted for 9-year-olds since 1980 at the lower range of the scale (Levels 150 and 200).

Trends in Levels of Reading Proficiency from 1971 to 1992 by Race/Ethnicity

Table 8.2 shows the percentages of 9-, 13-, and 17-year-old White, Black, and Hispanic students performing at or above each of the scale levels since 1971.[58] Because 1971 results are not available for Hispanic students, the first assessment results for Hispanic 9-, 13-, and 17-year-olds are from 1975.

White 9-year-old students demonstrated an increase in percentages from 1971 at the two lower levels of performance — from 94 percent to 96 percent at Level 150 and from 65 percent to 69 percent at Level 200. A larger proportion of White 17-year-olds performed at Level 250 — 84 percent in 1971 compared to 88 percent in 1992. White students also demonstrated an increase in percentages at Level 300 as compared to 1971 for both 13- and 17-year-old students. In 1971, 11 and 43 percent reached Level 300, respectively, compared to 18 and 50 percent in 1992. Similarly, more Hispanic 17-year-olds were at Levels 250 (53 up to 69 percent) and 300 (13 up to 27 percent) in 1992 compared to 1975.

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[58] Trends in percentages of students performing at or above each of the five levels in all assessments by race/ethnicity and gender are presented in the Data Appendix.

Table 8.2

Trends in Percentages of Students At or Above Five Reading Proficiency Levels by Race/Ethnicity, 1971 to 1992

		1971			1992		
				(1975)			
Levels	**Age**	**White**	**Black**	**Hispanic**	**White**	**Black**	**Hispanic**
LEVEL 350							
Learn from Specialized	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Reading Materials	13	0(0.1)	0(0.0)	0(0.0)	1(0.3)	0(0.2)	0(0.0)
	17	8(0.4)	0(0.1)	1(0.6)	8(0.8)	2(0.9)	2(0.8)
LEVEL 300							
Understand Complicated	9	1(0.2)	0(0.0)	0(0.0)	1(0.2)	0(0.0)	0(0.2)
Information	13	11(0.5)*	1(0.2)*	2(1.0)	18(1.1)	6(1.4)	6(1.9)
	17	43(0.9)*	8(0.9)*	13(2.7)*	50(1.4)	17(2.5)	27(3.2)
LEVEL 250							
Interrelated Ideas and	9	18(0.7)	2(0.5)*	3(0.5)	20(1.0)	5(0.8)	7(2.3)
Make Generalizations	13	64(0.9)	21(1.2)*	32(3.6)	68(1.4)	38(2.7)	41(5.1)
	17	84(0.7)*	40(1.6)*	53(4.1)*	88(0.9)	61(2.3)	69(4.0)
LEVEL 200							
Partial Skills and	9	65(1.0)*	22(1.5)*	35(3.0)	69(1.2)	37(2.2)	43(3.5)
Understanding	13	96(0.3)	74(1.7)	81(2.3)	96(0.6)	82(2.7)	83(3.5)
	17	98(0.2)	82(1.5)*	89(2.4)	99(0.3)	92(1.6)	93(2.3)
LEVEL 150							
Simple, Discrete	9	94(0.4)*	70(1.7)*	81(2.5)	96(0.5)	80(2.2)	83(2.6)
Reading Tasks	13	100(0.0)	99(0.3)	100(0.3)	100(0.1)	99(1.0)	98(2.2)
	17	100(0.0)	98(0.4)	99(0.4)	100(0.0)	99(0.7)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. Significance tests for extreme percentages (either >90 or <10 percent) should be interpreted with caution. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). The first assessment results for Hispanic 9-, 13-, and 17-year-old students are from 1975.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

A greater proportion of Black 9-year-old students reached Level 150 in 1992 than in 1971, from 70 percent to 80 percent. The percentage of Black 9- and 17-year-old students performing at or above Level 200 increased significantly between 1971 and 1992, from 22 percent to 37 percent for 9-year-olds and from 82 to 92 percent for 17-year-olds. In addition, there were more Black students at all ages attaining at least Level 250 in 1992 than in 1971, particularly at ages 13 and 17. At age 13, the increase was from 21 to 38 percent, and at age 17, it was from 40 to 61 percent. The same positive increase was observed at the more difficult Level 300 for Black 13-year-olds (from 1 to 6 percent) and 17-year-olds (from 8 to 17 percent).

Despite the progress made by Black and Hispanic students, particularly at age 17, their performance in 1992 remained well below that of White students. In 1992, one-half of the White 17-year-olds performed at or above Level 300, compared to 27 percent of the Hispanic students and 17 percent of the Black students.

Trends in Levels of Reading Proficiency from 1971 to 1992 by Gender

Across the assessments, females have continued to outperform males in reading proficiency at most levels. As shown in Table 8.3, 87 percent of 17-year-old female students reached Level 250 in 1992, a significant increase over the 83 percent at that level in 1971. In addition, there was a significant increase between 1971 and 1992 in the percentages of both 13-year-old males and females attaining Level 300. The percentage of males performing at or above Level 300 rose from 7 to 13 percent, while that for females rose from 12 to 18 percent.

Table 8.3

Trends in Percentages of Students At or Above Five Reading Proficiency Levels by Gender, 1971 to 1992

		1971		1992	
Skills and Strategies	**Age**	**Male**	**Female**	**Male**	**Female**
LEVEL 350					
Learn from Specialized	9	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Reading Materials	13	0(0.0)	0(0.1)	0(0.3)	1(0.3)
	17	5(0.4)	8(0.5)	5(0.7)	8(0.7)
LEVEL 300					
Understand Complicated	9	1(0.2)	1(0.2)	1(0.2)	1(0.3)
Information	13	7(0.5)*	12(0.6)*	13(1.1)	18(1.1)
	17	34(1.1)	44(1.2)	38(1.6)	48(1.5)
LEVEL 250					
Interrelated Ideas and	9	12(0.6)	19(0.8)	14(1.0)	18(1.1)
Make Generalizations	13	52(1.2)	64(1.1)	56(2.0)	68(1.4)
	17	74(1.0)	83(1.0)*	78(1.2)	87(1.1)
LEVEL 200					
Partial Skills and	9	53(1.2)	65(1.1)	57(1.6)	67(1.2)
Understanding	13	91(0.7)	95(0.4)	90(1.1)	95(0.7)
	17	95(0.4)	97(0.3)	96(0.7)	98(0.4)
LEVEL 150					
Simple, Discrete Reading	9	88(0.7)	93(0.5)	90(0.8)	94(0.6)
Tasks	13	100(0.1)	100(0.1)	99(0.4)	100(0.2)
	17	99(0.1)	100(0.1)	100(0.2)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Reading Performance from 1984 to 1992 on Constructed-Response Questions

To determine students' ability to construct their own thoughtful responses to text, a subset of the questions included in the NAEP reading trend scale asked students to analyze, interpret, and evaluate what they had read. These tasks not only required students to demonstrate understanding, but also to express their ideas and reflections in a written response that could be understood by others. The tasks are described in Figure 8.2.

Figure 8.2

Constructed-Response Assessment Tasks, 1984 to 1992

Task 1: (Science passage) Students were asked to read it and discuss the main idea.

Task 2: (Biographical piece) Students were asked to read it and then interpret the writer's view.

Task 3: (Informative piece) Students were asked to make comparisons between what they had read and their own experiences.

Task 4: (Informative piece) Students were asked to interpret how the writer conveyed a particular impression.

Task 5: (Historical piece) Students were asked to compare and contrast information contained in the article.

Task 6: (Humorous piece) Students were asked to evaluate it.

Task 7: (Literary piece) Students read it in order to discuss the mood.

Task 8: (Informative piece) Students were asked to discuss what it was about.

For each task, students' responses were evaluated according to their overall success in responding to the question and the extent to which ideas were substantiated with evidence from the passage. Responses were rated as being either unsatisfactory, minimal, satisfactory, or elaborated. Responses rated as unsatisfactory did not address the task, providing irrelevant or inappropriate comments or information. Minimal responses indicated a partial understanding of the task, generally reflecting incomplete comprehension of the passage. Satisfactory responses included enough detail to indicate that students had comprehended the passage successfully, providing the appropriate response to the task and some support for their ideas. Elaborated responses went beyond a basic understanding of the passage by restructuring or extending ideas in the passage and providing relevant support. They identified relations among ideas, even when relations were not stated explicitly.

Across all ages and nearly all the tasks, fewer than half of the students in 1984 and 1992 provided responses that were rated as containing evidence of at least satisfactory comprehension. Table 8.4 displays the percentages of students at each score level for the constructed-response tasks in the reading trend assessment. At age 9, most students provided unsatisfactory or minimal responses to the three tasks. Since 1984, no significant changes were observed in 9-year-olds' performance on these constructed-response questions.

Few changes were observed for 13-year-olds as well, except for Task 5, which required students to compare and contrast information contained in a historical article. The percentage of 13-year-old students providing responses rated as satisfactory rose in 1992 to 41 percent, from only 33 percent in 1984. The increased percentage of students attaining the satisfactory score level on this task was accompanied by a decrease in the percentage of students providing minimal responses.

At age 17, there was a mixture of changes, including improvements in performance on three tasks along with some decline on another task. When asked to read a science passage and discuss the main idea in Task 1, more students were able to give minimal responses in 1992 than had been able to do so in 1984. Along with an increase in performance at the minimal level, a decrease in the percentage of students providing unsatisfactory responses on this task was observed. Indications of improvement at a higher level were noted for Task 4, in which students were asked to interpret how the writer conveyed a particular impression. Specifically, more students in 1992 responded with satisfactory answers than did so in 1984. With Task 3, significantly more of these students in 1992 received the highest rating for making comparisons between what they had read and their own experiences. In addition, fewer of them received a minimal rating on the same task. Seventeen-year-olds' performance on Task 5, however, was less proficient in 1992 than in 1984. More students provided unsatisfactory responses, while fewer students gave minimal responses in 1992 compared to 1984.

Table 8.4

Trends in Students' Responses to Constructed-Response Questions, 1984-1992

Tasks	Rating	1984			1992		
		Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
Task 1	Unsatisfactory	69(1.8)	47(1.8)	34(1.1)*	64(2.5)	53(2.5)	24(2.0)
	Minimal	29(1.6)	41(1.5)	43(1.4)*	32(2.6)	34(2.7)	52(2.1)
	Satisfactory	2(0.5)	11(1.0)	21(0.8)	4(0.8)	10(1.4)	22(1.9)
	Elaborated	0(0.0)	1(0.3)	2(0.3)	0(0.0)	2(1.1)	2(0.5)
Task 2	Unsatisfactory	28(1.6)	–	–	29(1.6)	–	–
	Minimal	57(1.6)	–	–	52(2.3)	–	–
	Satisfactory	14(1.0)	–	–	18(1.9)	–	–
	Elaborated	0(0.1)	–	–	2(0.5)	–	–
Task 3	Unsatisfactory	56(1.8)	–	17(1.0)	58(1.9)	–	19(1.6)
	Minimal	40(2.0)	–	59(1.1)*	37(1.9)	–	51(2.7)
	Satisfactory	4(0.7)	–	22(1.1)	4(0.8)	–	25(1.9)
	Elaborated	0(0.1)	–	2(0.3)*	1(0.5)	–	5(1.0)
Task 4	Unsatisfactory	–	52(1.4)	45(1.5)	–	54(2.7)	47(2.5)
	Minimal	–	40(1.3)	47(1.6)	–	36(2.6)	39(2.6)
	Satisfactory	–	7(0.8)	8(0.8)*	–	10(1.6)	14(1.5)
	Elaborated	–	1(0.2)	0(0.2)	–	0(0.2)	0(0.3)
Task 5	Unsatisfactory	–	24(0.9)	15(0.8)*	–	26(1.8)	23(2.0)
	Minimal	–	41(1.2)*	51(1.2)*	–	33(2.2)	43(1.8)
	Satisfactory	–	33(1.3)*	33(1.5)	–	41(2.1)	34(1.8)
	Elaborated	–	2(0.3)	1(0.2)*	–	0(0.0)	0(0.1)
Task 6	Unsatisfactory	–	–	2(0.5)	–	–	2(0.6)
	Minimal	–	–	76(1.2)	–	–	72(2.4)
	Satisfactory	–	–	19(1.0)	–	–	23(2.2)
	Elaborated	–	–	2(0.4)	–	–	3(0.7)
Task 7	Unsatisfactory	–	–	3(0.4)	–	–	3(0.8)
	Minimal	–	–	18(0.9)	–	–	17(1.7)
	Satisfactory	–	–	18(0.6)	–	–	20(1.7)
	Elaborated	–	–	62(1.1)	–	–	60(2.3)
Task 8	Unsatisfactory	–	–	48(1.5)	–	–	50(2.4)
	Minimal	–	–	40(1.5)	–	–	39(2.7)
	Satisfactory	–	–	11(0.9)	–	–	11(1.4)
	Elaborated	–	–	1(0.3)*	–	–	0(0.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Summary

In general, positive trends between 1971 and 1992 were more apparent toward the upper end of performance on the reading assessment than at the lower levels. For example, more 13- and 17-year-old students reached at least Level 300 in 1992 than in 1971, indicating that more students could understand complicated literary and informational passages. However, fewer 9-year-olds in 1992 were able to perform at least at the level of partial skills and understanding (Level 200) than in 1980.

Significant gains for 17-year-old Black students between 1971 and 1992 were seen in the percentages reaching at least Levels 200, 250, and 300. In addition, Black 13-year-olds made gains at Levels 250 and 300. Seventeen-year-old Hispanic students reached Levels 250 and 300 in greater proportions in 1992 than in 1975. There were more White 13- and 17-year-olds reaching Level 300 in 1992 than in 1971. On average, White students continued to demonstrate higher reading proficiency than their Black and Hispanic counterparts.

The increased percentage of 13-year-olds reaching Level 300 in 1992 over 1971, noted for the nation, was seen for both males and females. Seventeen-year-old female students also demonstrated gains at Level 250. Across the assessments, female students continued to display an advantage in reading proficiency over their male counterparts.

While some differences in performance on the constructed-response reading tasks were observed, the overall results remained relatively stable. Students at all ages demonstrated difficulty in providing thoughtful analysis and interpretations of what they read. For a majority of the tasks, very few of the in-school 17-year-olds were able to provide elaborated responses.

9

Pattern and Trends in School and Home Influences on Literacy Development

Introduction

This chapter looks at trends in factors related to students' home and school environments as they relate to literacy development. The opportunities provided for students to read a variety of materials and engage in positive literacy activities are considered by reading specialists, researchers, and classroom professionals to be important contributors to the development of reading abilities. Since 1984, and in some cases since 1971, NAEP has asked students to provide information about these opportunities and resources, as well as their attitudes and habits related to reading. This information is extremely valuable in helping parents, educators, and policymakers understand how literacy develops and what aspects of a student's experience are most related to advanced abilities in reading. Being able to observe changes across time may also indicate patterns of change in instructional and environmental influences and their relationship to students' achievement.

Trends in Reading Across the Curriculum from 1984 to 1992

The amount of reading that students complete as a part of instruction has been identified as a key factor in promoting literacy abilities. With an increasing emphasis on reading across the curriculum, reading as a process and tool for learning has taken on expanded importance in students' education.[59] NAEP asked students about the amount of reading they completed on a daily basis for school — both in class and for homework. The question was asked about all of their reading, not just reading required as a part of reading instruction. Since 1984, there have been some significant changes in how much reading students reported completing for school, as shown in Table 9.1.

For both 9- and 13-year-olds, more students in 1992 reported reading at least 20 pages each day than had reported doing so in 1984 — from 13 percent to 19 percent for 9-year-olds, and from 10 percent to 14 percent for 13-year-olds. In addition, significantly more 13-year-olds reported reading 16 to 20 pages on a daily basis. These increases in the percentages of 9- and 13-year-olds reading greater amounts for school were accompanied by significant decreases in 9- and 13-year-old students reading 5 or fewer pages, and fewer 13-year-olds reading 6 to 10 pages.

No significant changes were observed for 17-year-olds in the amount of reading they reported accomplishing daily for school. While it would seem that older students should be more capable of completing larger amounts of reading as a part of school assignments, this type of developmental pattern was certainly not pronounced. A pattern of increased reading proficiency associated with more pages read per day was observed across the age groups. For all three ages, those students who reported reading five or fewer pages per day for homework had lower average proficiencies than students who reported reading more pages. These data support the warnings of many educators and researchers that reading across the curriculum is an important aspect of students' overall reading proficiency and should not be ignored.[60]

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[59] Simonsen, S. & Singer, H., "Improving Reading Instruction in the Content Areas." In S. J. Samuels, & A. E. Farstrup (Eds.). *What Research Has to Say About Reading Instruction, 2nd edition* (Newark DE: International Reading Association, 1992).

[60] Chall, J., Jacobs, V. A., & Balwin, L. E. *The Reading Crisis: Why Poor Children Fail* (Cambridge MA: Harvard University Press, 1990).

Table 9.1

Trends in Pages Read Per Day in School and For Homework, 1984 to 1992

		AGE 9		AGE 13		AGE 17	
Number of Pages	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
More than 20	1992	19(1.0)	215(2.0)	14(1.1)	268(2.7)	22(1.2)	301(1.9)
	1984	13(0.4)*	215(1.4)	10(0.4)*	261(1.2)*	20(1.0)	299(1.0)
16 - 20	1992	14(0.5)	215(1.7)	13(0.6)	264(2.5)	14(0.5)	299(2.1)
	1984	13(0.5)	215(1.2)	11(0.2)*	263(1.0)	14(0.4)	296(0.9)
11 - 15	1992	14(0.6)	217(1.9)	19(0.6)	266(1.7)	17(0.6)	294(2.1)
	1984	14(0.5)	220(1.2)	18(0.4)	264(0.9)	18(0.3)	294(0.8)
6 - 10	1992	25(0.7)	212(1.6)	31(0.8)	261(1.6)	26(0.8)	288(2.0)
	1984	25(0.5)	215(1.0)	35(0.5)*	261(0.6)	26(0.6)	287(0.8)
5 or fewer	1992	29(1.0)	203(1.5)	23(0.9)	250(1.9)	20(1.0)	272(1.7)
	1984	35(1.0)*	208(0.8)*	26(0.6)*	250(0.7)	21(0.8)	273(0.8)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Another factor that would seem to influence students' literacy development is their exposure to a wide variety of materials. Not only are educators and parents concerned about the amount of reading in which students engage, there is a general consensus that these reading experiences should be varied and representative of different types of materials. Since 1984, NAEP has asked students about the different types of texts they read. Trend results for this aspect of students' reading experiences are presented in Table 9.2. Some positive changes were noted in types of materials being read by students.

Significantly more 13- and 17-year-old students indicated that they were reading poems and biographies in 1992 than in 1984. At age 17, there also were increases in the percentages of students reading plays and science books. To some extent, it would appear that students are increasingly being exposed to a wider variety of reading materials. However, it may yet be troubling that in 1992 among those students who are nearest completion of their schooling, only 69 to 84 percent reported ever reading poems, plays, biographies, science books, or books about other places. For those 17-year-olds without exposure to these materials, there may be an unfortunately narrow scope to their reading experiences.

Table 9.2

Trends in Reading Certain Types of Materials a Few Times a Year or More Frequently, 1984 to 1992

		AGE 9		AGE 13		AGE 17	
Types of Materials	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Poems	1992	70(1.6)	211(2.0)	74(1.9)	264(2.8)	84(1.5)	294(1.8)
	1984	70(1.5)	211(1.9)	68(1.3)*	260(1.2)	76(1.1)*	290(1.5)
Play	1992	54(2.0)	208(2.3)	64(2.3)	262(2.8)	71(1.6)	293(1.6)
	1984	56(1.4)	211(2.5)	59(1.4)	260(1.3)	63(1.0)*	290(1.7)
Biographies	1992	47(2.5)	212(2.6)	72(1.8)	263(2.5)	69(2.0)	294(2.0)
	1984	45(1.5)	213(2.4)	62(1.3)*	261(1.3)	59(1.2)*	292(1.4)
Science Books	1992	88(1.3)	211(2.0)	92(0.9)	261(2.2)	80(1.4)	293(1.9)
	1984	84(1.3)	212(1.6)	90(1.1)	259(1.2)	70(1.1)*	289(1.4)
Books About Other Places	1992	81(1.5)	211(1.8)	80(1.6)	262(2.3)	84(1.5)	294(1.7)
	1984	79(1.2)	211(1.7)	83(1.1)	259(1.1)	81(0.9)	289(1.4)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Time Spent on Homework for All Subjects from 1984 to 1992

Past NAEP assessments in reading and other subject areas have found interesting relationships between reading achievement and time spent on homework across all subjects. Table 9.3 presents students' responses to questions asked about the average amount of time spent on homework each day for all subjects. Variations in the relationship between homework time and reading proficiency were observed across the age groups.

Significant changes since 1984 in amount of time devoted to homework were observed for 9- and 17-year-olds. In 1992, more 9-year-olds reported spending 1 hour or less a day doing homework, compared to 1984. This increase in students spending at least some time on homework was accompanied by a decrease in the proportion of 9-year-olds reporting that they typically have no homework, although this decrease was not significant. About one-third of the 17-year-old students in the 1992 assessment reported either having no homework, or having homework but not doing it. There was a significant increase in 1992, compared to 1984, in the percentage of 17-year-olds reporting that they spend 1 hour or less a day completing homework assignments. Among 17-year olds in 1992, more time spent on homework was associated with higher average reading proficiency.

Table 9.3

Trends in the Amount of Time Spent on Homework for All Subjects, 1984 to 1992

		AGE 9		AGE 13		AGE 17	
Amount of Homework	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
None	1992	32(1.7)	211(1.5)	21(1.3)	253(1.8)	22(1.0)	274(1.6)
	1984	36(1.3)	212(0.9)	23(0.8)	254(0.8)	22(0.9)	276(0.7)
Didn't Do Assigned Homework	1992	4(0.3)	193(4.0)	4(0.4)	251(3.8)	12(0.5)	286(2.5)
	1984	4(0.3)	198(2.1)	4(0.2)	247(1.7)	11(0.3)	287(1.2)
Less than 1 Hour	1992	47(1.4)	215(1.1)	36(0.8)	260(1.8)	29(0.8)	291(2.0)
	1984	42(1.0)*	218(0.7)	36(0.7)	261(0.6)	26(0.4)*	290(0.8)
1-2 Hours	1992	12(0.6)	211(2.1)	29(1.2)	269(1.6)	25(0.8)	298(1.5)
	1984	13(0.5)	216(1.3)	29(0.5)	266(0.7)	27(0.5)	296(0.8)
More than 2 Hours	1992	5(0.5)	195(4.4)	10(0.8)	267(2.7)	12(0.8)	308(2.8)
	1984	6(0.2)	201(1.8)	9(0.3)	264(1.2)	13(0.6)	303(1.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in the Extent of Reading in the Home from 1984 to 1992

Social and cultural influences on reading abilities and attitudes are receiving increasing attention among educators. Some researchers have suggested that the home environment is central among these influences.[61] One way in which the home environment can support literacy development is the modeling of reading habits by parents or other adults in the home. Children may come to value the use of literacy materials by observing the important people in their lives engaged in such activities.[62] NAEP has asked 13- and 17-year-olds about this aspect of their home environment since 1984. Specifically, students were asked how often people they lived with read newspapers, magazines, and books. Students were grouped in three categories: those who reported that the persons they lived with never read newspapers, magazines, and books, or read these materials very infrequently (i.e., yearly or monthly); those who reported that the individuals they lived with read these materials on a weekly basis; and those who said they lived with someone who read these materials on a daily basis. Table 9.4 presents trend results on this important aspect of students' environment.

Since 1984, no changes were observed in the extent of reading in the home among 13- and 17-year-olds. The reports of students in both age groups were quite similar. In 1992, 44 percent of 13-year-olds and 40 percent of 17-year-olds said that reading of newspapers, magazines, or books occurred in their homes on a daily basis. Another 40 and 45 percent, respectively, reported these reading habits occurred weekly. An intergenerational component of literacy development has been supported by some research highlighting the significance of reading activities in the home on students' reading achievement and attitudes.[63] Therefore, it may be of some concern that 16 and 15 percent of adolescents said that these types of reading practices took place only monthly or less frequently in their homes. In 1992, these students had lower reading proficiencies than their peers who reported daily reading activities in the home.

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[61] Chall, J. S., Jacobs, V. A., & Baldwin, L. E., *The Reading Crisis: Why Poor Children Fall Behind* (Cambridge, MA: Harvard University Press, 1990).

Stevenson, J. & Fredman, G., "The Social Environmental Correlates of Reading Ability." *Journal of Child and Psychiatry*, 681-698 (July, 1990).

[62] Rogoff, B. *Apprenticeship in Thinking: Cognitive Development in Social Context.* (New York, NY: Oxford University Press, 1990)

[63] Rowe, K. J., "The Influence of Reading Activity at Home on Students' Attitudes Toward Reading, Classroom Attentiveness, and Reading Achievement: An Application of Structural Equation Modeling." *British Journal of Education Psychology*, 61, 19-35 (February, 1991).

Table 9.4

Trends in the Extent of Reading in the Home, 1984 to 1992

		AGE 13		AGE 17	
Extent of Reading in the Home	Year	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Never/Yearly/Monthly	1992	16(1.6)	241(4.1)	15(1.4)	275(6.3)
	1984	16(1.0)	245(2.0)	14(0.8)	268(2.3)
Weekly	1992	40(2.3)	260(2.6)	45(1.6)	290(3.1)
	1984	43(1.1)	259(2.0)	44(1.1)	288(1.5)
Daily	1992	44(1.9)	265(3.1)	40(1.8)	298(2.9)
	1984	41(0.9)	263(1.8)	42(1.4)	292(1.6)

• The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Exposure to Reading in the Home from 1971 to 1992

The availability of reading materials in the home may represent increased opportunities for students to develop as readers, as well as demonstrate for them the importance of literacy in our daily lives. Because of the potential significance, NAEP has asked students since 1971 whether they have access to newspapers, magazines, books, and encyclopedias in their homes. The long-term trend results indicate some significant changes, as displayed in Table 9.5.

Perhaps most noteworthy was the finding that percentages of students with all four types of reading materials in their homes declined significantly since 1971. There was an 8 to 10 percentage point decrease across all three ages. As a result, more 13- and 17-year-olds reported only three of these types of reading materials in their homes, and more students at all three ages reported having zero to two types. If having access to reading materials outside the school is considered important for growth in literacy abilities, then clearly, those students who have few or no reading materials in their homes may be considered "at-risk" in the sense that their literacy development may lack the enrichment and stimulation that is so important for young or older readers.[64]

The overall increases in reading proficiency that were seen for the nation among 13- and 17-year-olds between 1971 and 1992 are reflected in these data as well. That is, regardless of numbers of types of reading materials in the home, there was evidence of increased proficiency since 1971. This increase was not, however, significant for 17-year-olds reporting four types of reading materials in their homes. Nine-year-olds who reported three or fewer types of materials in their homes demonstrated increased proficiency between 1971 and 1992. The 1992 data indicated, however, that more types of reading materials in the home continued to be associated with higher reading proficiency at all ages, thus providing support for the notion that availability of reading materials in the home may have an important influence on students' overall reading ability.

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[64] Snow, C., Barnes, W., Chandler, J., Goodman, I., & Hemphill, L. *Unfulfilled Expectations: Home and School Influences on Literacy.* (Cambridge, MA: Harvard University Press, 1991).

Table 9.5

Trends in Numbers of Materials in the Home, 1971 to 1992

		AGE 9		AGE 13		AGE 17	
Numbers of Types of Materials in the Home	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
0-2	1992	37(0.7)	197(1.3)	22(0.9)	241(2.1)	18(0.8)	269(2.3)
	1971	28(0.8)*	186(1.0)*	17(0.6)*	227(1.3)*	11(0.6)*	246(1.8)*
3	1992	33(0.7)	214(1.2)	31(0.8)	256(1.5)	27(0.8)	286(1.8)
	1971	32(0.4)	208(1.0)*	25(0.5)*	249(0.9)*	22(0.5)*	274(1.4)*
4	1992	30(0.8)	224(1.4)	48(1.2)	271(1.2)	55(0.9)	299(1.3)
	1971	39(0.9)*	223(0.9)	58(1.0)*	266(0.7)*	67(0.9)*	296(1.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Trends in Independent Reading Habits from 1984 to 1992

Educators and researchers continue to call for increased encouragement and support for students' recreational reading. Reading research has documented a positive relationship between reading ability and the likelihood of seeking pleasure in reading experiences.[65] NAEP has asked 9-, 13-, and 17-year-old students about recreational reading habits since 1984. Table 9.6 presents responses of students in 1992 as compared to the responses of their counterparts in 1984.

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[65] Anderson, R. C, Wilson, P. T., & Fielding, L. G., "Growth in Reading and How Children Spend Their Time Outside of School" *Reading Research Quarterly*, 285-303 (Summer, 1988).

Table 9.6

Trends in Amount of Time Spent Reading for Fun, 1984 to 1992

		AGE 9		AGE 13		AGE 17	
Amount of Reading	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Daily	1992	56(1.2)	215(1.6)	37(2.4)	269(2.5)	27(1.5)	304(3.7)
	1984	53(1.0)	214(1.1)	35(1.0)	264(1.4)	31(0.8)	297(1.5)
Weekly	1992	28(1.2)	212(2.2)	32(1.8)	260(3.8)	33(1.5)	291(3.7)
	1984	28(0.8)	212(1.7)	35(1.2)	254(1.4)	34(1.1)	290(1.7)
Monthly	1992	6(0.5)	204(7.8)	13(1.5)	257(3.2)	18(1.4)	287(4.7)
	1984	7(0.6)	204(3.3)	14(0.8)	255(2.1)	17(0.5)	290(1.8)
Yearly	1992	3(0.4)	197(5.5)	8(1.1)	250(8.2)	12(1.2)	282(5.2)
	1984	3(0.3)	197(4.2)	7(0.5)	252(3.6)	10(0.5)	280(2.7)
Never	1992	7(0.7)	189(3.7)	10(1.5)	246(6.4)	11(1.3)	268(5.5)
	1984	9(0.5)	198(2.7)	8(0.6)	239(2.5)	9(0.6)	269(2.4)

* The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Essentially no change was observed between 1984 and 1992 in the amount of time students at any of three ages assessed devoted to reading for fun. These results may seem troubling since in 1985, *Becoming a Nation of Readers: The Report of the Commission on Reading* identified independent reading as a necessary aspect of literacy development. The authors of that report recommended that "Children should spend more time in independent reading."[66] Unfortunately, since 1984 no increase in this behavior has been observed.

Approximately one-fifth of 13- and 17-year-olds reported in 1992 that they read for fun only yearly or never. In general, there seemed to be a pattern of decreased reading for fun as the age of the students increased, at least on a daily basis. In 1992, daily reading habits were reported by 56 percent of 9-year-olds, 37 percent of 13-year-olds, and only 27 percent of 17-year-olds.

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[66] Anderson, R. C., Hiebert, E. H., Scott, J. A., & Wilkinson, I. A. G., *Becoming a Nation of Readers: The Report of the Commission on Reading* (U.S. Department of Education: The National Institute of Education, 1985).

These results in 1992 were comparable to those from 1984. In 1992, those students at all three ages who reported daily reading for fun had higher average proficiencies than students who reported never reading for fun. Furthermore, at ages 13 and 17, daily reading for fun was associated with higher reading proficiency than monthly reading for fun.

There are numerous habits and practices characteristic of students who develop into life-long readers. For example, discussing and sharing books with others has been described as an important literacy activity.[67] Social interaction related to reading may help students to see themselves as participants in a larger literacy community that supports and fosters reading interests.[68] In addition, taking books from the library or spending their own money on books may demonstrate the importance of reading activities for students. Selecting and reading books by the same author may also indicate the development of more sophisticated selection strategies for choosing books.[69] Taken together, these examples of activities related to reading represent an impressive repertoire of literacy habits and practices. Students in the NAEP reading assessments since 1984 have reported their involvement in these literacy activities.

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[67] Carlsen, G. R., & Sherrill, A., *Voices of Readers: How We Come to Love Books* (Urbana, IL: National Council of Teachers of English, 1988).

[68] Martin, P., "Readers/Leaders: Exploring the Why" *Language Arts, 80,* 47-53 (1989).

[69] Hiebert, E. H., Mervar, K. B., & Person, D., "Research Directions: Children's Selection of Trade Books in Libraries and Classrooms" *Language Arts,* 67, 758-763 (1990).

Table 9.7 presents the percentages of students in 1984 and 1992 at each age who reported ever engaging in any or all of these four activities. At all three ages, students who participated in all four of these activities had higher average reading proficiency than students who reported being involved in fewer of these activities.

Significantly more 9-year-olds in 1992 than in 1984 reported engagement in all four of the activities — telling a friend about a good book, taking books out of the library, spending their own money on books, and reading more than one book by an author they liked. This increase was accompanied by a decrease in the percentage of 9-year-olds who reported engaging in none or only one of the four activities.

Table 9.7

Trends in Engagement in Reading-Related Activities, 1984 to 1992

		AGE 9		AGE 13		AGE 17	
Number of Activities	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
0-1	1992	8(0.7)	204(4.4)	13(1.7)	243(5.7)	19(1.7)	273(4.7)
	1984	10(0.5)*	205(2.5)	12(0.8)	242(2.1)	16(0.8)	270(1.7)
2	1992	13(0.8)	207(2.8)	14(1.6)	257(4.0)	13(1.6)	279(5.6)
	1984	16(0.8)	208(1.7)	14(0.8)	246(2.6)	14(0.6)	282(2.1)
3	1992	30(1.3)	208(2.1)	24(1.8)	252(3.6)	24(1.8)	288(4.0)
	1984	31(1.0)	210(1.8)	25(0.9)	255(1.5)	23(0.7)	289(1.8)
4	1992	49(1.7)	217(1.7)	48(2.6)	272(2.7)	44(1.8)	302(2.9)
	1984	44(1.0)*	216(1.5)	49(1.1)	264(1.3)*	47(1.3)	298(1.6)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Trend Assessment

Summary

The data presented in this chapter about students' school and home experiences related to their literacy development provide a broad picture of the context within which our students are learning to read. There were some indications that the amount of reading being accomplished by students for their school assignments has increased since 1984 for 9- and 13-year-olds. However, no changes were observed for 17-year-old students and one-fifth of them continued to report reading only five or fewer pages on a daily basis for school and for homework.

A similar mixture of encouraging and less encouraging news was seen in the trend data between 1984 and 1992 for types of materials being read by students. While significantly more 13- and 17-year-olds were reading poems and biographies and more 17-year-olds were reading plays and science books in 1992, the overall results continue to be somewhat disappointing. The fact that only 69 percent of 17-year-olds reported ever reading biographies, or that only 80 percent of them reported the same for science books may be of concern to many educators and parents.

More 9-year-olds in 1992 than in 1984 reported spending at least some time (less than 1 hour) each day on homework. However, in 1992, those students who reported that they did not do homework on a daily basis, either because it was not assigned or they did not do it, accounted for 36 percent of 9-year-olds, 25 percent of 13-year-olds, and 34 percent of 17-year-olds.

The home environmental influences on literacy appear to have changed in a somewhat disappointing manner since 1984. There were no differences between 1992 and 1984 in the extent of reading in the home. However, the proportion of students having access to four types of reading materials — newspapers, magazines, books, and encyclopedias — decreased since 1984 at all three ages assessed.

Students were reading for fun with approximately the same frequency in 1992 as in 1984, despite widespread calls to increase these activities. However, among 9-year-olds some increase in literacy-related activities was observed. Compared to their counterparts in 1984, more 9-year-olds in 1992 reported engaging in all four of a series of literacy activities — telling a friend about a good book, taking books out of the library, spending their own money on books, and reading more than one book by an author they liked.

Part IV

Trends in Writing Achievement from 1984 to 1992

Introduction

This section of the report is based on four national assessments of writing performance conducted during the school years ending in 1984, 1988, 1990, and 1992. In each of the assessments, nationally representative samples of students in grades 4, 8, and 11 — approximately 30,000 students in all — responded to a series of writing tasks. To assess the informative, persuasive, and imaginative writing performance of the nation's students and to track changes in performance across time, the 1992 assessment included a set of 12 writing tasks that had been administered in 1984, 1988, and 1990.[70] Thus, the same tasks were given to nationally representative samples of students at four different points in time. Students also were asked to answer a brief questionnaire about their writing experiences and instruction.

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[70] *The 1992 NAEP Writing Report Card* presents the results of a separate NAEP writing assessment which involved the use of an entirely new set of writing tasks, longer response times, and a pre-writing page. A forthcoming report will present the results of a study of students' classroom-based writing at grades 4 and 8.

Writing Objectives: 1988 Assessment (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1987).

Writing Objectives: 1984 Assessment (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1984).

The past 20 years have seen a dramatic shift in the focus of writing research and practice away from the text and toward the writer. Our understanding of the processes involved in writing and of the effective ways to teach writing have evolved during this time.[71] Writing is now seen as a recursive process involving invention and brainstorming, drafting and composing, reflecting and revising, and evaluating and editing. Research has shown that students learn to write well by frequent practice and by developing an understanding of the dynamics of the composing process.[72] Research also indicates that students are more likely to write competently when they routinely write in all subject areas and write a variety of types of texts.[73]

Because competence in one type of writing does not necessarily go hand in hand with competence in another, the 1984, 1988, 1990, and 1992 assessments were designed to examine students' abilities to engage in three types of writing: informative, persuasive, and imaginative.[74] For example, students were asked to complete brief, informative descriptions, reports, and analyses; to write persuasive letters and arguments; and to invent their own stories. The resulting papers were evaluated on the basis of the students' success in accomplishing the specific purpose of each writing task (as measured by primary trait scoring), their relative writing fluency (as measured by holistic scoring), and their mastery of the conventions of written English (as measured by their spelling, punctuation, and grammar).

Summary of Procedures: 1984, 1988, 1990, and 1992

To examine trends in writing achievement from 1984 to 1992, one set of analyses used primary trait scoring to focus on the writer's effectiveness in accomplishing each task.[75] Primary trait scoring is designed to be sensitive to the writer's understanding of the audience as well as to the inclusion of specific features needed to accomplish the specific purpose of that task. The primary trait scoring criteria, while specific to each writing prompt, defined five levels of task accomplishment: not rated, unsatisfactory, minimal, adequate, and elaborated. General definitions of these levels are provided below.

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[71] Emig, J., *The Composing Process of Twelfth Graders* (Urbana, IL: National Council of Teachers of English. Research Report No. 13, ERIC Document No. ED 058205, 1971).

[72] Britton, J., *Prospect and Retrospect: Selected Essays of James Britton*, Gordon M. Pradl, editor (Montclair, NJ: Boynton/Cook Publishers, Inc., 1982).

[73] Hillocks, G., Jr., *Research on Written Composition: New Directions for Teaching* (Urbana, IL: ERIC Clearinghouse on Reading and Communication Skills, 1986).

[74] Pringle, I., & Freedman, A., *A Comparative Study of Writing Abilities in Two Modes at the Grade 5, 8, and 12 Levels* (Toronto, Ontario: The Minister of Education, Ontario, 1985).

[75] Lloyd-Jones, R., "Primary Trait Scoring," in *Evaluating Writing: Describing, Measuring, Judging*, C. R. Cooper and L. Odell, editors (Urbana, IL: NCTE, 1977).

Levels of Task Accomplishment

Level 4 - Elaborated

Students providing elaborated responses went beyond the essential, reflecting a higher level of coherence and providing more detail to support the points made.

Level 3 - Adequate

Students providing adequate responses included the information and ideas necessary to accomplish the underlying task and were considered likely to be effective in achieving the desired purpose.

Level 2 - Minimal

Students writing at the minimal level recognized some or all of the elements needed to complete the task but did not manage these elements well enough to assure that the purpose of the task would be achieved.

Level 1 - Unsatisfactory

Students who wrote papers judged as unsatisfactory provided very abbreviated, circular, or disjointed responses that did not even begin to address the writing task.

Level 0 - Not rated

A small percentage of the responses were blank, indecipherable, completely off task, or contained a statement to the effect that the student did not know how to do the task; these responses were not rated.

The samples of writing generated by students in the assessments represent their ability to produce first-draft writing on demand in a relatively short time and under less than ideal conditions; thus, the guidelines for evaluating task accomplishment are designed to reflect these constraints and do not require a finished performance. Because primary trait scoring is based on established criteria, it is theoretically possible for all papers to be rated at the highest level on a straightforward task, or for all papers to be scored at the lowest level on a particularly difficult task. Overall, the primary trait scoring procedure provides the best assessment of students' ability to perform each task.

A second set of analyses, based on general impression or holistic scoring, focused on the writer's fluency in responding to each task relative to the performance of other students at that grade level.[76] In holistic scoring, readers do not make separate judgments about specific aspects of writing, but instead consider the overall effect, rating each paper on a six-point scale on the basis of the paper's general fluency. Unlike primary trait scores, the average score for a set of papers rated holistically will generally fall near the midpoint of this scale. Thus, while primary trait scoring permits year-to-year and grade-level to grade-level comparisons on specific criteria, holistic scoring permits year-to-year comparisons of relative fluency at each grade.

The final set of analyses, applied to a subset of the papers, focused on the mechanics of students' writing. Students' mastery of the sentence-level and word-level conventions of English, as well as their use of correct punctuation were examined.[77] (See the Procedural Appendix for the scoring scheme.)

To further analyze trends in students' writing performance, the primary trait results across tasks have been aggregated using sophisticated item response theory (IRT) scaling techniques that account for the multi-level student responses to the individual writing tasks (see Procedural Appendix for details). The trend writing scale ranges from 0 to 500, with a mean of 250 and standard deviation of 50.

This is the first time it has been possible to scale the writing trend data. New scaling procedures were developed that can accommodate multiple levels of student responses. Scaling the writing trend data enhances the number of analyses that can be made and is used to compare overall writing performance among subgroups of students defined by demographic characteristics, as well as by a variety of home and school factors (see Chapter 10).

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[76] Cooper, C. R., "Holistic Evaluation of Writing," in *Evaluating Writing: Describing, Measuring, Judging*, C. R. Cooper and L. Odell, editors, (Urban, IL: National Council of Teachers of English, 1977).

[77] Shaughnessy, M. P., *Errors and Expectations: A Guide for the Teacher of Basic Writing* (New York: Oxford University Press, 1977).

An additional analysis was performed to relate the proficiency scale to the levels of student performance described by the scoring guides. A special mapping procedure was used to profile students' task-by-task performance in relation to percentiles on the summary scale. For each grade, students' levels of performance on each individual writing task are mapped in relation to their overall writing achievement as summarized by the NAEP trend writing scale (see Chapter 11).

The NAEP writing scale used for monitoring trends in proficiency as discussed in this trend report should not be confused with the newly developed NAEP writing scale used to report student performance on the 1992 assessment at grades 4, 8, and 12.[78] The new 1992 assessment contains an entirely new set of writing tasks and students were given almost twice as much time to respond. At the eighth and twelfth grades, several 50-minute tasks were developed. Students were given a planning page in order to make notes and sketch out their ideas. New scoring criteria were also developed to meet the expanded and more demanding nature of the tasks. Six levels of task accomplishment were defined and employed to classify and evaluate students' responses. It should also be noted that the trend assessment is administered in the fall, winter, and spring to grades 8, 4, and 11, while the new assessment is administered in the spring to grades 4, 8, and 12. Thus, differences between the trend assessment and the new 1992 assessment preclude direct comparisons between the two assessments.

NAEP reports the performance of groups of students, not individuals. The results in this trend report include measures of average performance on the trend writing scale for groups of students, the percentages of students attaining various levels on the trend scale, and the percentages of students responding to each of the assessment tasks at different levels of success. Because these averages and the percentages are based on samples, they are necessarily estimates. Like all estimates based on surveys, they are subject to sampling error. NAEP uses a complex procedure (the jackknife methodology) to compute standard errors that estimate the sampling error and other random error associated with observed assessment results, and provides this information with the assessment results. In the tables and figures presented in this report, each average proficiency or percentage is presented with a standard error — an estimate of the sampling error and other errors associated with the observed assessment results. Statistically significant differences between previous assessments and 1992 are denoted with an asterisk, and statistically significant differences between 1984 and subsequent assessments are denoted with a dagger. These tests were supported by tests for linear and quadratic components of the trend line, which also are noted in the Data Appendix when they were statistically significant.

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[78] Applebee, A. N., Langer, J. A., Mullis, I. V.S., Latham, A. S, & Gentile, C. A., *NAEP 1992 Writing Report Card* (Washington, DC: National Center for Education Statistics, 1994).

The first chapter in Part IV, Chapter Ten, presents trends in average writing proficiency for the nation and various demographic subpopulations, offering a global view of the assessment results. Chapter Eleven presents trends in performance at each of five levels of proficiency along the trend writing scale.

Chapter Twelve describes student performance on the informative, persuasive, and imaginative writing tasks included in the writing trend assessments, based on the results of the primary trait and holistic analyses. Trends in students' grammar, punctuation, and spelling are also discussed in Chapter Twelve. Lastly, Chapter Thirteen relates various background factors to students' performance, such as their instructional experiences and characteristics of their home environment.

10

Trends in Writing Achievement for the Nation and Demographic Subpopulations

National Trends in Writing Proficiency from 1984 to 1992

NAEP has conducted trend writing assessments in 1984, 1988, 1990, and 1992, each one involving nationally representative samples of fourth, eighth, and eleventh graders. In each assessment, NAEP presented students at each of the grade levels with the same set of writing tasks or prompts as in the prior assessments. Although students at each grade responded to the same six prompts in each assessment, the tasks across grades represented partially overlapping, but somewhat different sets of prompts. As explained in more detail in the preceding introduction, student responses to each prompt were evaluated according to task accomplishment where 0=Not Rated, 1=Unsatisfactory, 2=Minimal, 3=Adequate, and 4=Elaborated. To further analyze trends in students' writing achievement, the results across tasks have been aggregated using sophisticated item response theory (IRT) scaling techniques that account for the multi-level student responses to the individual writing tasks (see the Procedural Appendix for details). The writing scale ranges from 0 to 500, with a mean of 250 and a standard deviation of 50. This chapter presents the overall trends in writing achievement for the nation and the demographic subpopulations by reporting changes in students' average performance on the 500-point scale.

The national results presented in Figure 10.1 show few significant changes in average performance across assessments for grades 4 and 11. For grade 8, there was a significant decline in proficiency from 1984 to 1990, followed by a significant rise in proficiency in 1992.

Fourth graders.

When comparing fourth graders' performance between 1984 and 1992, no significant changes were observed. There was a significant increase in performance between 1990 and 1992.

Eighth graders.

Eighth graders showed declines in performance across the assessments in the 1980s to the extent that they were writing significantly less well, on average, in 1990 than in 1984. This trend was reversed in 1992, with a significant improvement in performance, up 18 scale points from 1990. Eighth graders had higher average performance in 1992 than in 1984. In addition to the tests of significance, a quadratic test of relationships revealed a decrease followed by an increase in performance across the assessment years (see Data Appendix).

An increase of this magnitude in such a large national sample is unusual. To ensure that this increase reflected an actual change in student performance, ETS reviewed and evaluated all of its administration, scoring, and analysis procedures. The administration procedures were the same in 1992 as in previous trend years — the same materials were given to eighth graders at the same time of year as in previous trend years. The eighth graders' writing was scored at the same time of year as in previous trend assessments and the same scoring guides and papers were used. Rigorous quality control measures were then employed to examine the data analysis procedures and no inconsistencies were found.[79]

Eleventh graders.

Neither the tests of significance nor tests for linear and quadratic relationships revealed any changes between performance in 1992 and earlier years (see Data Appendix).

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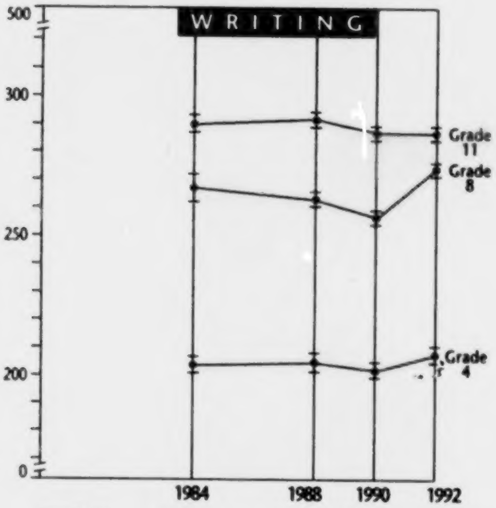
[79] Carlson, J., & Johnson, E., "Grade 8 Writing Trend: Investigation of The Changes in Mean Proficiency Between 1988 and 1990 and Between 1990 and 1992. Appendix in *The NAEP 1992 Technical Report* (Washington, DC: National Center for Educational Statistics, 1994). Also, see the Procedural Appendix for details.

FIGURE 10.1

Trends in Average Writing Achievement for the Nation, 1984 to 1992



	1984	1988	1990	1992
Grade 11	290(1.6)	291(1.3)	287(1.0)	287(1.4)
Grade 8	267(2.0)*	264(1.3)*	257(1.2)*†	274(1.3)†
Grade 4	204(1.5)	206(1.6)	202(1.5)*	207(1.5)

⌶ 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Quartiles

Table 10.1 shows trends in average writing proficiency for students at each grade who were in the upper quartile, middle two quartiles, and lower quartile of student performance in each of the assessments.

Between 1984 and 1992, there were no significant changes at grade 4 across the performance distribution. However, between 1990 and 1992, significant gains were achieved by fourth graders in the lower quartile, indicating that the increase in performance by fourth graders at the national level between these two years was likely the result of the gains achieved by the less proficient students.

At the eighth grade, students in both the upper quartile and middle two quartiles demonstrated declines and gains similar to the national trend. Students in 1992 outperformed students in each of the previous assessment years. Also, as with the national trend, the performance of students in the middle two quartiles and lower quartile declined between 1984 and 1990. The performance of students in all three groups — upper, middle, and lower quartiles — increased significantly between 1990 and 1992. This indicates that the dramatic gains achieved by eighth graders between 1990 and 1992 on a national level were a result of gains by students across the range of proficiency.

For eleventh graders, there were no significant changes in average achievement between 1984 and 1992 for students in the upper, middle, or lower quartiles. The significant decline between 1984 and 1990 in performance for students in the middle two quartiles, and between 1988 and 1992 in the lower quartile, reflected relatively modest fluctuations in the data from assessment to assessment.

Table 10.1
Trends in Average Writing Proficiency by Quartiles, 1984 to 1992

Quartile	Year	AVERAGE PROFICIENCY Grade 4	 Grade 8	 Grade 11
Upper Quartile	1992	246(1.3)	311(1.0)†	319(2.0)
	1990	242(1.6)	294(1.1)*	324(1.6)
	1988	247(1.7)	296(1.3)*	320(1.0)
	1984	240(2.3)	297(1.4)*	322(1.9)
Middle Two Quartiles	1992	208(1.7)	275(1.4)†	289(1.1)
	1990	203(1.5)	257(1.0)*†	287(0.8)†
	1988	207(1.5)	264(1.0)*	293(1.2)
	1984	204(1.4)	268(2.4)*	291(1.2)
Lower Quartile	1992	166(1.4)	237(2.1)	253(1.5)
	1990	158(2.4)*	219(1.5)*†	250(2.1)
	1988	162(1.8)	230(1.8)	260(2.4)*
	1984	166(2.6)	233(3.2)	254(2.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Race/Ethnicity

Trends in average writing proficiency for White, Black, and Hispanic students are summarized in Figure 10.2.[80] The average writing achievement of White fourth and eleventh graders did not change significantly from 1984 to 1992. However, consistent with the national writing trends, the average achievement of White eighth graders decreased significantly between 1984 and 1990, and then increased significantly between 1990 and 1992.

For Black students there was a significant decrease in performance at grade 11 between 1988 and 1992. Black eighth graders' performance showed a significant increase between 1990 and 1992. There were no significant changes across the years at grade 4. Thus, between 1990 and 1992, the difference between the average proficiency of Black eighth and eleventh graders decreased from 29 to 5 scale points. This reduction in the difference between eighth- and eleventh-grade performance may indicate less growth in writing ability between eighth and eleventh grade than expected. However, it would be prudent to wait until the 1994 trend data have been analyzed to see whether the unusual increase in eighth grade performance is maintained before considering this change.

For Hispanic eleventh graders, there was a significant increase in performance between 1984 and 1990, but no significant change between 1990 and 1992. At grade 8, there was a significant increase between each of the assessment years and 1992. There were no significant changes in Hispanic fourth graders' performance across assessments.

In 1992, White students at all three grade levels outperformed Hispanic and Black students, and at grade 4 Hispanic students outperformed Black students. The gap in performance between eleventh-grade White and Hispanic students decreased significantly between 1984 and 1990, but the gap in 1992 was not statistically different from the gap in 1984 (see Figure 3 in the Executive Summary).

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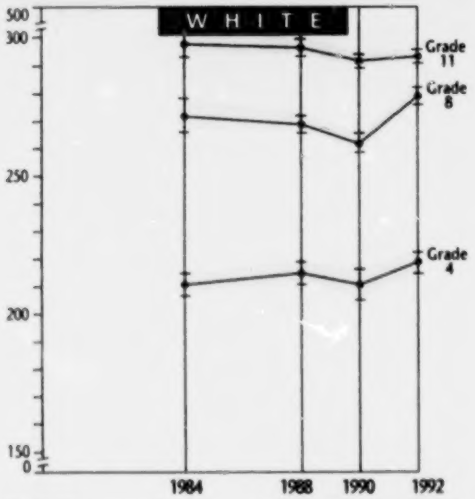
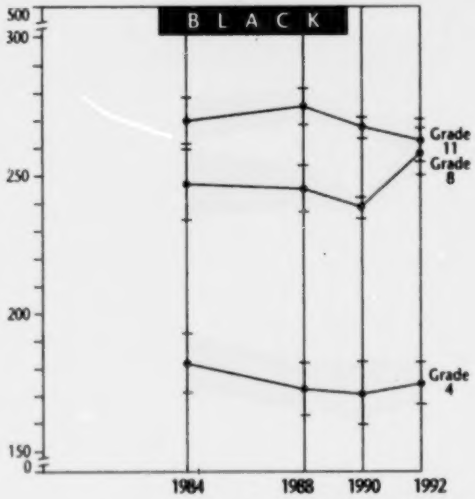
[80] For Asian/Pacific Islander or American Indian students, the sample sizes were insufficient to permit reliable trend estimates.

FIGURE 10.2

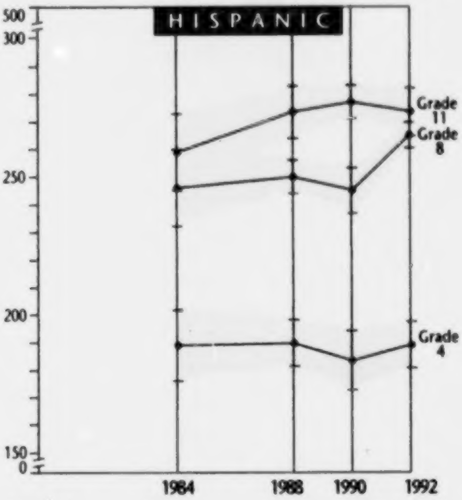
Trends in Average Writing Achievement by Race/Ethnicity, 1984 to 1992



	1984	1988	1990	1992
Grade 11	297(1.8) 75(1.1)*	296(1.3) 74(0.1)*	293(1.2) 71(0.2)†	294(1.2) 71(0.2)†
Grade 8	272(2.1)* 76(0.9)*	269(1.3)* 71(0.2)†	262(1.6)*† 70(0.2)†	279(1.3)† 70(0.3)†
Grade 4	211(1.9) 71(1.0)	215(1.9) 70(0.3)	211(2.0) 70(0.3)	217(1.7) 71(0.3)



1984	1988	1990	1992
270(3.6) 15(1.0)	275(2.9)* 15(0.1)*	268(2.3) 16(0.2)*	263(3.2) 14(0.2)
247(5.7) 12(0.6)*	246(3.5) 15(0.2)*†	239(2.3)* 15(0.2)†	258(4.0) 16(0.1)†
182(5.0) 15(0.9)	173(4.7) 16(0.2)	171(5.4) 15(0.3)	175(3.8) 16(0.2)



	1984	1988	1990	1992
Grade 11	259(6.6) 8(0.6)*	274(4.4) 8(0.1)*	277(2.6)† 9(0.1)*	274(3.8) 11(0.2)†
Grade 8	247(6.4)* 8(0.7)*	250(2.5)* 10(0.1)†	246(2.8)* 10(0.2)†	265(2.2)† 10(0.2)†
Grade 4	188(5.8) 11(0.7)	190(3.5) 11(0.3)	184(4.1) 11(0.2)*	189(3.6) 10(0.2)

⊥●⊤ 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

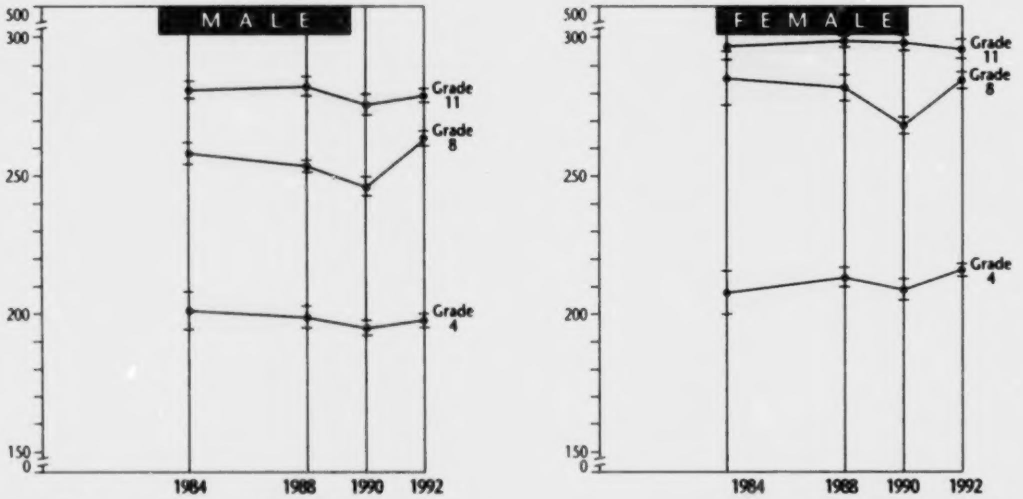
SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Gender

At grade 11, there were no significant changes in male or female students' average performance. At grade 8, for both male and female students, there were significant declines in average performance between 1984 and 1990, followed by significant increases between 1990 and 1992. The average writing achievement of fourth-grade males did not change significantly across time, while the achievement of fourth-grade females increased significantly between 1984 and 1992. In 1992, females outperformed males at all three grade levels, which reflected no change in the gender gap across writing assessments (see Figure 4 in the Executive Summary).

FIGURE 10.3

Trends in Average Writing Achievement by Gender, 1984 to 1992



	Male 1984	Male 1988	Male 1990	Male 1992	Female 1984	Female 1988	Female 1990	Female 1992
Grade 11	281(1.4)	282(2.0)	276(1.6)	279(1.2)	299(2.5)	299(1.2)	298(1.5)	296(2.0)
	51(1.6)	47(1.5)*	51(0.8)	53(1.1)	49(1.6)	53(1.5)*	49(0.8)	47(1.1)
Grade 8	258(2.3)	254(1.5)*	246(1.5)*†	264(1.9)	276(2.4)*	274(1.7)*	268(1.3)*†	285(1.3)†
	51(1.2)	49(1.1)	50(0.9)	50(0.8)	49(1.2)	51(1.1)	50(0.9)	50(0.8)
Grade 4	200(2.8)	199(2.3)	195(1.9)	198(1.7)	208(3.1)*	213(2.0)	209(2.2)*	216(1.7)†
	53(1.7)	50(1.0)	51(1.0)	50(0.6)	47(1.7)	50(1.0)	49(1.0)	50(0.6)

● 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Region

Figure 10.4 summarizes students' overall performance by region. Average proficiency in the Northeast did not change significantly across the eight years between 1984 and 1992 at grades 4 and 11. Following the national trend, eighth-grade performance declined between 1984 and 1990, and increased significantly between 1990 and 1992.

In the Southeast, eleventh-grade writing proficiency declined between 1988 and 1992. At grade 8, performance declined between 1984 and 1990, and then increased to its previous level in 1992. The performance of fourth graders in the Southeast declined between 1984 and 1992.

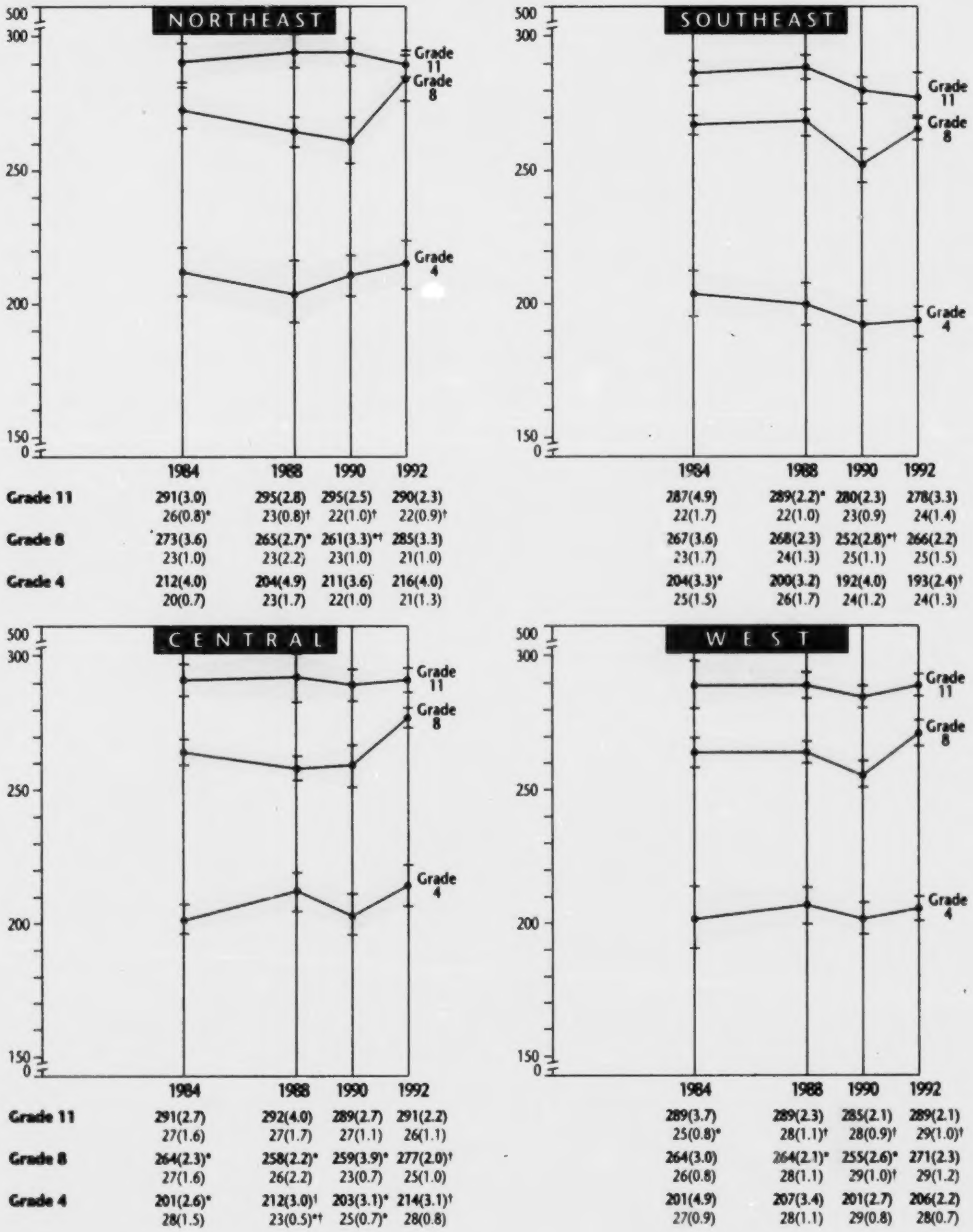
In the Central region, eleventh graders' performance did not change significantly between 1984 and 1992. At grades 4 and 8, there was a significant increase between 1984 and 1992.

The performance of eleventh and fourth graders in the West did not change significantly over the eight-year period. The performance of eighth graders from the Western region increased between 1988 and 1992, after remaining stable between 1984 and 1988.

In 1992, students in the Southeast had significantly lower average proficiency than students in the Northeast, Central, and West regions at grades 4 and 11, and lower average proficiency than students in the Northeast and Central regions at grade 8. At grade 8, students in the Northeast also outperformed students in the West.

FIGURE 10.4

Trends in Average Writing Achievement by Region, 1984 to 1992



	1984	1988	1990	1992	1984	1988	1990	1992
Grade 11	291(3.0) 26(0.8)*	295(2.8) 23(0.8)†	295(2.5) 22(1.0)†	290(2.3) 22(0.9)†	287(4.9) 22(1.7)	289(2.2)* 22(1.0)	280(2.3) 23(0.9)	278(3.3) 24(1.4)
Grade 8	273(3.6) 23(1.0)	265(2.7)* 23(2.2)	261(3.3)*† 23(1.0)	285(3.3) 21(1.0)	267(3.6) 23(1.7)	268(2.3) 24(1.3)	252(2.8)*† 25(1.1)	266(2.2) 25(1.5)
Grade 4	212(4.0) 20(0.7)	204(4.9) 23(1.7)	211(3.6) 22(1.0)	216(4.0) 21(1.3)	204(3.3)* 25(1.5)	200(3.2) 26(1.7)	192(4.0) 24(1.2)	193(2.4)† 24(1.3)

	1984	1988	1990	1992	1984	1988	1990	1992
Grade 11	291(2.7) 27(1.6)	292(4.0) 27(1.7)	289(2.7) 27(1.1)	291(2.2) 26(1.1)	289(3.7) 25(0.8)*	289(2.3) 28(1.1)†	285(2.1) 28(0.9)†	289(2.1) 29(1.0)†
Grade 8	264(2.3)* 27(1.6)	258(2.2)* 26(2.2)	259(3.9)* 23(0.7)	277(2.0)† 25(1.0)	264(3.0) 26(0.8)	264(2.1)* 28(1.1)	255(2.6)* 29(1.0)†	271(2.3) 29(1.2)
Grade 4	201(2.6)* 28(1.5)	212(3.0)† 23(0.5)*†	203(3.1)* 25(0.7)*	214(3.1)† 28(0.8)	201(4.9) 27(0.9)	207(3.4) 28(1.1)	201(2.7) 29(0.8)	206(2.2) 28(0.7)

● 95 percent confidence interval.

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Type of Community

Trends in average writing proficiency for students living in advantaged urban, disadvantaged urban, extreme rural, and other communities are presented in Table 10.2.

At grades 4, 8, and 11, average writing proficiency was essentially the same in 1992 as in 1984 for students attending schools in advantaged urban communities. However, there have been some fluctuations across the assessments. Advantaged urban students in grades 4 and 8 showed a significant increase in average performance between 1990 and 1992. At grade 11, there was a significant decline between 1984 and 1988.

The performance of fourth graders living in disadvantaged urban areas decreased between 1984 and 1990. There were no significant changes across the writing assessments at grades 8 or 11 for students living in disadvantaged urban areas.

There were no significant changes across the eight years at any of the three grades for students living in extreme rural areas. Also, for fourth and eleventh graders living in other communities there were no significant changes in average writing proficiency. At the eighth grade, there was a significant decrease between 1984 and 1990 for students living in other communities, followed by a significant increase in 1992.

In 1992, at grades 4 and 8, advantaged urban students performed significantly higher than their counterparts living in extreme rural, disadvantaged urban, and other communities; and students living in extreme rural and other communities also outperformed those in disadvantaged urban communities. At grade 11, students living in advantaged urban, extreme rural, and other communities performed significantly higher than those living in disadvantaged urban areas.

Table 10.2

Trends in Average Writing Achievement by Type of Community, 1984 to 1992

Type of Community	Year	GRADE 4		GRADE 8		GRADE 11	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Advantaged Urban	1992	10(1.9)	236(2.6)	12(2.2)	294(3.7)	9(1.7)	297(3.8)
	1990	10(2.0)	217(4.5)*	11(1.9)	279(3.9)*	11(1.8)	295(5.0)
	1988	14(2.3)	218(4.1)*	14(3.7)	271(3.3)*	17(4.0)	295(2.7)†
	1984	13(2.3)	221(6.5)	12(2.6)	286(5.4)	16(2.6)	306(3.0)
Disadvantaged Urban	1992	9(1.8)	184(4.1)	9(1.3)	252(3.8)	12(1.9)	270(3.0)
	1990	10(3.1)	175(6.4)†	9(1.5)	245(3.8)	9(2.2)	273(3.8)
	1988	8(2.6)	175(7.3)†	7(2.1)	246(3.7)	1(0.8)†*	256(8.1)
	1984	12(2.2)	199(5.6)	8(1.3)	249(8.5)	11(2.1)	267(5.0)
Extreme Rural	1992	10(3.0)	203(4.5)	10(2.1)	267(3.2)	10(2.3)	289(3.2)
	1990	10(2.4)	202(3.9)	10(2.9)	252(6.0)	13(1.9)†	286(3.0)
	1988	10(2.5)	202(3.8)	6(1.8)	268(4.1)	7(2.8)	292(3.4)
	1984	6(1.2)	188(7.0)	5(1.1)	260(3.6)	6(1.2)	287(4.0)
Other	1992	71(3.8)	207(1.7)	69(3.2)	275(1.7)†	68(3.2)	289(1.6)
	1990	69(4.6)	203(2.1)	70(3.5)	255(1.6)†*	67(3.4)	288(1.3)
	1988	68(4.3)	207(2.2)	73(4.6)	264(1.7)*	75(4.9)	291(1.3)
	1984	68(2.7)	203(1.6)	75(3.3)	266(2.4)*	67(3.1)	290(2.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

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Trends in Writing Proficiency from 1984 to 1992 by Parents' Highest Level of Education

Table 10.3 presents the trends in average writing proficiency by students' reports about their parents' highest level of education. The results indicate that, across all four assessments, the writing performance of fourth graders varied little for students regardless of their parents' highest level of education, except for those whose parents had graduated from college. However, it should be noted that approximately one-third of the fourth graders reported that they did not know their parents' educational level. Between 1984 and 1990, there was a significant decrease in the performance of fourth graders whose parents had graduated from college.

At grade 8, there was no change in the average proficiency of students whose parents had not graduated from high school. The performance of eighth graders whose parents had completed high school declined between 1984 and 1990 and then increased in 1992. Students whose parents had some post-high school education achieved significantly higher in 1992 than in 1990. The performance of eighth graders whose parents had graduated from college decreased between 1984 and 1990. It then increased significantly between 1990 and 1992.

In 1992, students whose parents had more education generally performed better than those with less formal education. At grades 8 and 11, students whose parents had some post-high school education and those whose parents graduated from college each had higher average writing achievement than students whose parents had not graduated from high school and those whose parents had graduated from high school but had no further formal education. At grade 4, students whose parents had graduated from college had significantly higher average writing proficiency than those whose parents had not graduated from high school or those whose parents had no further formal education beyond a high school diploma.

Table 10.3

Trends in Average Writing Proficiency by Parents' Highest Level of Education, 1984 to 1992

Level of Education	Year	GRADE 4		GRADE 8		GRADE 11	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Graduated From College	1992	42(1.0)†	214(1.4)	44(1.8)†	284(1.9)†	43(1.4)†	296(1.4)
	1990	40(1.6)†	209(1.6)†	38(1.5)*	265(1.8)†*	40(1.4)	298(2.0)
	1988	41(1.5)†	212(2.2)	41(1.5)†	271(1.8)†*	41(1.8)	299(2.0)
	1984	33(1.4)*	218(3.0)	36(1.5)*	278(1.8)*	36(1.6)*	300(2.4)
Some Education After High School	1992	6(0.4)	201(4.5)	12(0.7)†	280(2.2)	20(0.8)†	292(2.0)
	1990	5(0.4)	214(4.0)	12(0.7)	267(3.0)*	18(0.6)†	292(2.7)
	1988	5(0.5)	211(6.3)	11(0.6)	275(3.3)	18(0.8)	296(2.6)
	1984	5(0.4)	208(6.5)	10(0.8)*	271(3.9)	15(0.9)*	298(2.5)
Graduated From High School	1992	16(0.7)†	202(3.2)	29(1.1)†	268(1.6)†	27(0.9)†	278(2.2)
	1990	18(0.9)	197(3.0)	33(1.1)*	252(1.4)†*	30(1.1)	278(1.9)
	1988	18(1.1)	199(3.0)	31(1.2)	258(2.1)*	30(1.2)*	285(2.2)
	1984	20(1.1)*	192(3.4)	35(1.4)*	261(1.6)*	35(2.0)*	284(3.0)
Less Than High School	1992	4(0.4)†	191(3.2)	7(0.8)†	258(5.3)	8(0.8)	271(3.7)
	1990	6(0.5)	186(3.9)	8(0.6)	246(3.7)	8(0.5)	268(4.0)
	1988	5(0.7)	194(5.4)	8(0.7)	254(3.9)	8(0.8)	276(3.5)
	1984	7(0.6)*	179(4.6)	10(0.8)*	258(4.8)	11(1.2)	274(5.2)
I Don't Know	1992	31(1.0)	205(2.3)	8(0.6)	250(3.1)	3(0.3)	259(6.6)
	1990	32(1.1)	196(2.2)*	10(0.6)	235(2.8)*	3(0.3)	259(4.1)
	1988	30(1.4)	202(2.7)	8(0.5)	248(2.3)	3(0.3)	268(4.7)
	1984	35(1.3)	203(2.5)	9(0.8)	249(6.7)	3(0.5)	261(7.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Type of School

Students' average writing proficiency by the type of school they attended is shown in Table 10.4. The results show no statistically significant changes in average writing performance for public or private school students across the eight years at grades 4 and 11. At grade 8, there was a significant decline in average proficiency for students in public schools from 1984 to 1990, followed by a significant increase in 1992 that raised average achievement beyond the original 1984 level. There was also an increase in the performance of eighth graders attending private schools between 1988 and 1992, but this increase primarily served to counter a dip in performance observed between 1984 and 1988. Although the difference at grade 11 was not statistically significant, a gap in average writing performance remained in 1992 at grades 4 and 8 between public and private school students.

Table 10.4

Trends in Writing Proficiency by Type of School, 1984 to 1992

Type of School	Year	GRADE 4		GRADE 8		GRADE 11	
		Percent of Students	Average Proficiency	Percent of Students	Average Proficiency	Percent of Students	Average Proficiency
Public	1992	88(1.7)	205(1.6)	87(2.0)	272(1.3)†	91(2.2)	286(1.6)
	1990	92(1.8)	200(1.4)	87(1.9)	254(1.2)†*	92(1.7)	286(1.1)
	1988	88(3.0)	204(2.0)	88(2.7)	262(1.5)*	86(3.8)	290(1.2)
	1984	86(1.9)	202(1.8)	87(1.6)	264(2.0)*	89(1.5)	288(1.6)
Private	1992	12(1.7)	222(3.3)	13(2.0)	288(3.2)	9(2.2)	295(4.4)
	1990	8(1.8)	216(5.7)	13(1.9)	277(4.4)	8(1.7)	306(5.2)
	1988	12(3.0)	216(4.1)	12(2.7)	276(3.0)*	14(3.8)	300(3.6)
	1984	14(1.9)	215(4.6)	13(1.6)	282(5.5)	11(1.5)	305(3.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Writing Proficiency from 1984 to 1992 by Modal Age

Students' average writing performance by modal age is shown in Table 10.5. At grade 4 the results show a significant decrease between 1988 and 1992 in the percentage of students who were less than modal age and at modal age, as well as an increase in students who were greater than modal age. Likewise, at grade 8 there was a decrease in the percentage of students at modal age and an increase in students greater than modal age; and at grade 11 an increase in the percentage of students whose age is greater than the expected modal age.

As discussed in earlier sections of this report, various factors seem to have contributed to this change, such as an increase in delayed school entrance and higher retention rates. The effect of changes in age distribution within grades on average student proficiencies is mixed. Although fewer fourth graders are younger than the modal age, the performance of fourth graders in 1992 is significantly lower than in 1988 and 1990.

Table 10.5

Trends in Average Writing Proficiency by Modal Age

		GRADE 4		**GRADE 8**		**GRADE 11**	
Modal Age	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Less Than Modal Age	1992	0(0.1)	166(10.6)	1(0.2)	289(11.4)†	10(0.8)	295(4.0)
	1990	0(0.1)	226(21.8)*	1(0.2)	304(11.4)†	11(0.7)	295(4.3)
	1988	1(0.2)*	225(12.8)*	1(0.2)	259(17.4)	11(0.8)	299(2.1)
	1984	1(0.3)	204(21.1)	1(0.3)	242(11.5)*	13(1.3)	294(3.8)
At Modal Age	1992	56(1.1)†	212(1.5)	58(1.2)†	282(1.3)†	64(0.2)	293(1.7)
	1990	59(1.1)	205(2.7)	59(0.3)†	262(1.5)†*	64(0.2)†	292(1.1)
	1988	61(0.5)*	210(2.5)	59(0.2)†	271(1.2)*	68(0.2)*	297(1.2)
	1984	63(1.0)*	212(2.5)	64(1.4)*	272(1.8)*	67(1.2)	296(1.4)
Greater Than Modal Age	1992	44(1.1)†	201(1.9)	41(1.2)†	263(1.8)	26(0.9)†	269(2.0)
	1990	40(1.1)†	196(1.7)	40(0.3)†	248(1.7)†*	25(0.7)†	270(2.0)
	1988	38(0.6)*	199(2.0)	40(0.3)†	254(1.9)*	21(0.7)*	270(4.5)
	1984	36(1.0)*	190(4.5)	35(1.4)*	258(3.2)	20(1.5)*	267(3.1)

* Statistically significant difference from 1992 at about 95 percent confidence level. † Statistically significant difference from 1984. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

At grade 8, although the percentage of students who are younger than the modal age remained the same across the assessment years, the performance of students in 1990 and 1992 was significantly higher than in 1984. While the percentage of eighth graders at the modal age decreased significantly across the assessment years, the performance of these students decreased significantly between 1984 and 1990, and increased between 1984 and 1992. A similar pattern existed for eighth graders older than the modal age — their performance decreased significantly between 1984 and 1990 and increased significantly between 1990 and 1992. Although a smaller percentage of eleventh graders were at modal age and a higher percentage were older than the modal age in 1992 compared with earlier years, no significant changes were noted in their average proficiency.

Summary

The results of NAEP's analysis of trends in average writing proficiency from 1984 to 1992 revealed an unusually large gain at grade 8. After declining steadily between 1984 and 1990, average performance increased in 1992 beyond the original 1984 level. However, it would be prudent to wait until the 1994 trend data have been analyzed to see whether this increase is maintained. There were no statistically significant changes in overall writing performance at grade 11. At grade 4 there was an increase in performance between 1990 and 1992, although this countered downward fluctuations in the 1980s so that performance was essentially unchanged between 1984 and 1992. In examining the eighth-grade achievement trends, it was found that performance increased between 1990 and 1992 in most of the subpopulations.

Differences in average performance between subgroups remained large at all three grade levels in 1992, with females outperforming males and White students outperforming their Black and Hispanic counterparts. Students in private schools outperformed their counterparts in public schools at grades 4 and 8, and students in advantaged urban schools demonstrated higher average achievement than those attending schools in disadvantaged urban areas. At all three grades, students whose parents had graduated from college performed better than students whose parents had not graduated from high school or whose parents had no further formal education beyond high school graduation.

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Trends in Levels of Writing Proficiency for the Nation and Demographic Subpopulations

National Trends in Levels of Writing Proficiency from 1984 to 1992

To provide a context for interpreting the overall writing trend results presented in Chapter Ten and the trend results for individual writing tasks presented in Chapter Twelve, the tasks used in the trend writing assessment were *mapped* onto the writing scale.[81] In item mapping, for each item in the assessment, the point on the scale is identified at which individuals with that level of proficiency had a high probability of responding correctly. Because the NAEP writing assessment is a direct measure of students' writing abilities, it does not contain items that can be scored as correct or incorrect.

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[81] This technique is an adaptation of a method developed to report the results of NAEP's 1985 literacy assessment of young adults. For more information see Irwin S. Kirsch and Ann Jungeblut, *Literacy: Profiles of America's Young Adults* (Princeton, NJ: Educational Testing Service, 1986). See the Procedural Appendix for a description of the mapping procedure.

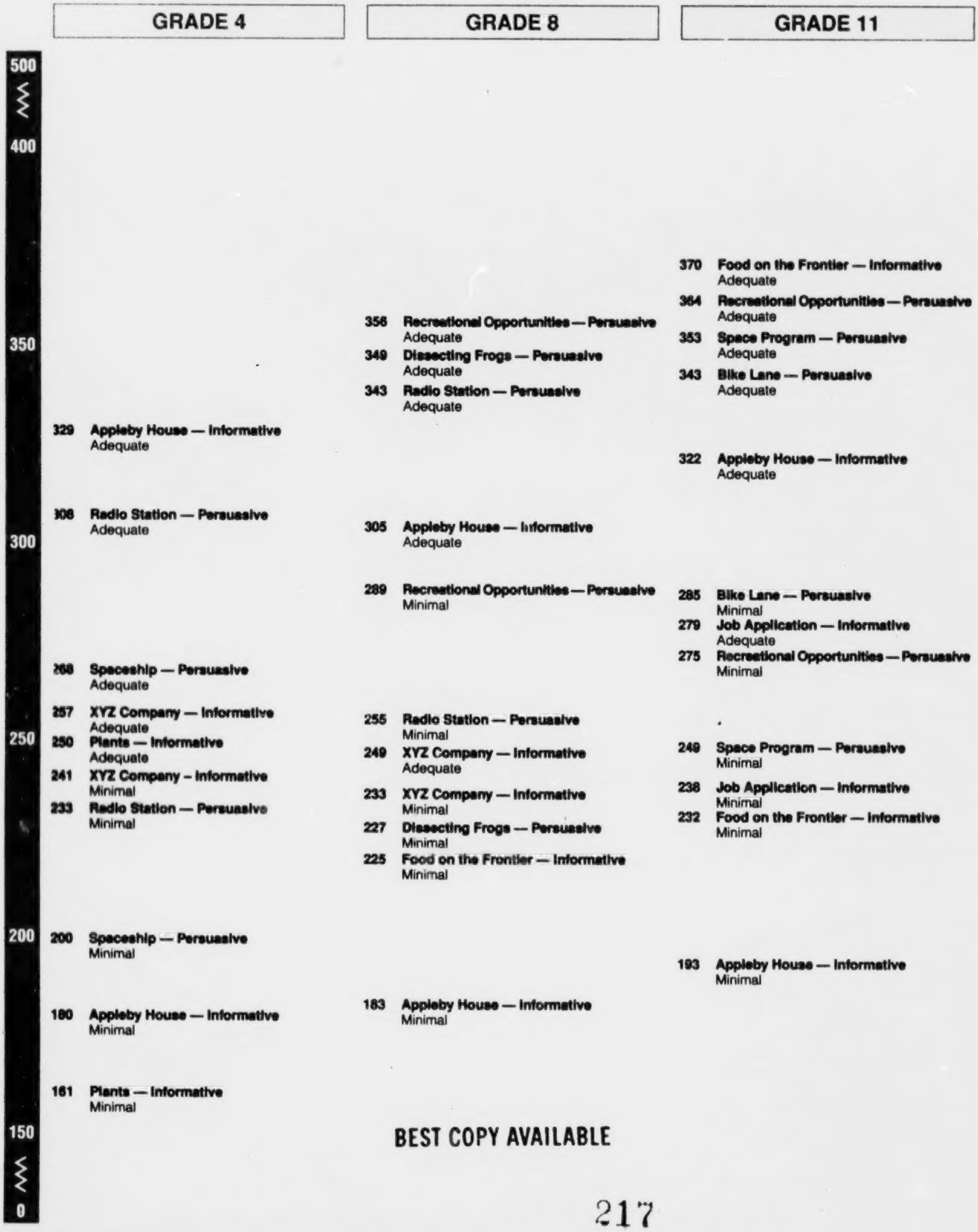
Instead, the assessment is composed of a series of writing tasks and students' unique responses are judged as fitting into one of four levels defined by a scoring guide. Thus, rather than simply mapping the level on the scale at which students were likely to provide a "correct" response to an item, the item mapping technique was modified to become a "students' level of response to each task" technique.

At each grade, for each level of student response for each task used in the assessment, the point on the scale was identified at which individuals with that level of proficiency had a 65 percent probability of writing a response at that level or greater. At grade 4 for instance, the persuasive task asking students to write a letter stating their view about whether creatures from another planet should be allowed to return home or be detained for scientific study (Spaceship task) mapped at Level 200 for minimal or better responses. This means that there is a .65 probability that students at Level 200 would write minimal or better responses to the task.

The adaptation of item mapping to the writing assessment is graphically displayed along the 500-point scale in Figure 11.1. In this figure, the grade 4, 8, and 11 results are presented separately.

Please note that item mapping is a replacement for the anchoring procedures conducted for the science, mathematics, and reading trend assessments. Because anchoring procedures rely on a set of items to define each anchor level, the number of writing tasks is too small to permit an accurate anchoring of the NAEP writing assessment. Instead, the various levels of student performance on each task was mapped onto the writing scale. More detailed information about item mapping and scaling procedures can be found in the procedural appendix.

FIGURE 11.1 **Difficulty Values Along the Writing Scale for the Different Levels of Performance on the Informative and Persuasive Tasks, Grades 4, 8, and 11, 1992**



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NOTE: In this graphic illustration, the locations of scale points are necessarily *approximate* for tasks clustered closely together.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Information about the percentage of students performing at or above the scale levels is provided in Table 11.1. These percentages can be used in conjunction with the task mapping to provide a portrait of the performance of students at each of the three grade levels.

Table 11.1

Trends in Percentages of Students At or Above Five Writing Proficiency Levels, 1984 to 1992

		ASSESSMENT YEARS			
Proficiency Levels	**Grade**	**1984**	**1988**	**1990**	**1992**
Level 350 Effective, Coherent Writing	4	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	8	0(0.1)*	0(0.1)*	1(0.2)*†	2(0.3)†
	11	2(0.7)	1(0.4)	4(0.7)*	2(0.4)
Level 300 Complete, Sufficient Writing	4	0(0.4)	1(0.2)	0(0.1)	0(0.2)
	8	13(1.8)*	13(0.8)*	12(0.8)*	25(1.5)†
	11	39(2.4)	39(1.7)	37(1.1)	36(1.9)
Level 250 Beginning Focused, Clear Writing	4	10(1.0)	15(1.1)†	12(0.9)	13(1.1)
	8	72(2.6)	67(1.7)*	57(1.5)*†	75(1.4)
	11	89(1.0)	93(1.5)*	84(1.3)†	87(1.3)
Level 200 Incomplete, Vague Writing	4	54(2.0)	56(2.0)	53(1.7)	58(1.9)
	8	98(0.9)	97(0.6)	93(0.6)*†	98(0.4)
	11	100(0.3)	100(0.3)	99(0.3)	100(0.2)
Level 150 Disjointed, Unclear Writing	4	93(1.3)	90(0.8)	89(1.1)*	93(0.5)
	8	100(0.0)	100(0.1)	100(0.1)	100(0.1)
	11	100(0.0)	100(0.0)	100(0.1)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. † Statistically significant difference from 1984, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

However, care should be taken in interpreting the item mapping results to keep the meaning of these percentages in mind. For example, at fourth grade, the information in Figure 11.1 and Table 11.1 can be used to develop insights about how many students across the country displayed particular types of writing abilities. Looking at Table 11.1, it can be seen that across the assessment years, from 53 to 58 percent of the fourth graders performed at or above Level 200 and between 10 to 15 percent reached or surpassed Level 250. Further, it can be seen that the students at Level 250 represent the best writers at that grade, since virtually none of the fourth graders reached Level 300. Figure 11.1 can be used to illustrate the types of writing abilities that these students demonstrated in the assessment. For example, for those students estimated to be at 250 on the fourth-grade writing scale (see Figure 11.1, column one), 65 percent responded to the Plants task at the adequate or better level.

It must be emphasized that these data reflect probabilities of success based on the performance observed in the assessment for students at various levels on the scale. In reality, although 65 percent of the fourth graders who were estimated to be at Level 200 responded to the Spaceship task at the minimal or better level, even greater percentages of the students at higher levels on the scale responded to this writing task at the minimal or better level. Also, some (but proportionally fewer) students at lower levels on the scale responded to this task at this level. The probabilities of success on this item were less for students at lower levels of the scale — much less at the lowest levels. Still, some of them did respond with a minimal or better response. Therefore, it is not a correct interpretation of the results that only the 58 percent of students performing at or above 200 could respond to this task at the minimal or better level. Looking at the task responses at the lower end of the scale, it is also important to remember that although many students at the higher end of the scale would have a response to the task rated at a higher level on the scoring guide, not all of them would.

As will be discussed in the following section, 58 percent of the fourth graders performed at or above Level 200 (Table 11.1). It also can be seen from Figure 11.1, that these students were at least reasonably likely (65 percent), and, by definition, more likely than those performing at lower levels on the scale, to provide minimal or better responses to informative and persuasive tasks.

Students' Writing Task Accomplishment by Proficiency Levels

Level 150: Disjointed, Unclear Writing: The results presented in Figure 11.1 indicate that students performing at this level tended to write responses that received unsatisfactory ratings for most of the tasks and minimal ratings for the Appleby House task at all three grades and the Plants task at grade 4. (See the figure on page 157 in the introduction to this section for a description of the levels of task accomplishment and Chapter Twelve for a discussion of each task.) Writing rated as unsatisfactory tended to be too brief and disjointed to be considered a response to the task or, when longer, so vague and unclear that it was hard to understand.

As presented in Table 11.1, 93 percent of the fourth graders and virtually all of the eighth and twelfth graders reached or surpassed Level 150 on the writing proficiency scale in 1992. At all three grades assessed, the same percentages of students reached this level in 1992 as in 1984.

Level 200: Incomplete, Vague Writing: Students performing at Level 200 tended to write responses that were rated as minimal to two-thirds of the informative tasks at grades 8 (Food on Frontier and XYZ Company) and 11 (Food on Frontier and Job Application) and, at grade 4, to one-third of the informative tasks (XYZ Company) and both persuasive tasks (Spaceship and Radio Station). Responses at the minimal level, although clearer and more detailed than those rated as unsatisfactory, still tended to be vague and incomplete.

In 1992, 58 percent of the fourth graders, almost all of the eighth graders, and all of the eleventh graders reached or surpassed Level 200. The percentages of students who reached this level were no different in 1992 from in 1984.

Level 250: Beginning Focused, Clear Writing: Fourth-grade students performing at this level tended to write adequate responses to two-thirds of the informative tasks (Plants and XYZ Company) and one-half of the persuasive tasks (Spaceship). Eighth graders wrote minimal responses to two-thirds of the persuasive tasks (Recreation Opportunities and Radio Station). Eleventh graders wrote minimal responses to two-thirds of the persuasive tasks (Bike Lane and Recreation Opportunities) and adequate responses to one-third of the informative tasks (Job Application).

Adequate responses were more focused and clear than minimal ones, containing enough development and detail likely to accomplish the assigned task successfully. However, at grades 8 and 11, if the task involved persuading an audience, students at Level 250 still did not provide an argument considered adequate to convince the intended audience. Thirteen percent of the fourth graders reached or surpassed this level in 1992. At grade 8, 75 percent of the students in 1992 achieved or surpassed this level which was essentially comparable to performance in 1984. However, this represents a significant increase from 1988 and a dramatic increase from 1990, when the percentage of eighth graders reaching Level 300 declined significantly as compared to 1984. Subsequent to fluctuations in earlier assessments, 87 percent of the eleventh graders reached or surpassed this level.

Level 300: Complete, Sufficient Writing: Students performing at this level tended to write responses that were rated as adequate for some of the tasks. At grade 8, students wrote adequate responses to one-third of the informative tasks (Appleby House) and two-thirds of the persuasive tasks (Dissecting Frogs and Radio Station). Grade 11 students at this level wrote adequate responses to one-third of the informative (Appleby House) and persuasive (Bike Lane) tasks. Responses at this level tended to be complete and to contain sufficient information to accomplish the basic task.

As shown in Table 11.1, almost none of the students at grade 4 reached this level across the assessments. At grade 8, 25 percent of the students reached or surpassed this level in 1992, a significant increase from earlier years. In 1992, 36 percent of the eleventh graders achieved or surpassed this level, which represented no significant change from previous assessments.

Level 350: Effective, Coherent Writing: Students performing at this level tended to write responses that were rated as adequate for even the more difficult persuasive and analytic tasks. The writing at this level provided clear and complete responses to the assigned task. It tended to contain supportive details and discussion that contributed to the effectiveness of the response. This writing was also characterized by an overall unity and coherence not found at lower levels.

Very few students achieved or surpassed this level. None of the fourth graders and almost none of the eighth graders reached this level.

Trends in Levels of Writing Proficiency from 1984 to 1992 by Race/Ethnicity

Table 11.2 shows the percentage of fourth-, eighth-, and eleventh-grade White, Black, and Hispanic students performing at or above each of the scale levels.

Table 11.2

Trends in Percentages of Students At or Above Five Writing Proficiency Levels by Race/Ethnicity, 1984 to 1992

		ASSESSMENT YEARS					
		1984			1992		
Proficiency Levels	**Grade**	**White**	**Black**	**Hispanic**	**White**	**Black**	**Hispanic**
Level 350	4	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Effective, Coherent	8	0(0.2)	0(0.0)	0(0.0)	2(0.4)	1(0.7)	1(0.7)
Writing	11	3(0.9)	0(0.0)	0(0.0)	2(0.5)	0(0.0)	0(0.7)
Level 300	4	0(0.5)	0(0.0)	0(0.9)	1(0.2)	0(0.0)	0(0.0)
Complete,	8	16(2.2)*	3(1.7)*	4(2.3)*	28(1.9)	13(2.3)	16(2.4)
Sufficient Writing	11	46(2.9)	16(4.4)	8(4.3)	43(2.2)	10(2.7)	20(4.3)
Level 250	4	12(1.1)	2(2.2)	5(2.3)	17(1.5)	1(0.7)	4(1.2)
Beginning Focused,	8	79(2.6)	48(9.2)	47(8.7)	80(1.5)	58(4.3)	67(3.7)
Clear Writing	11	95(1.3)	76(5.2)	62(9.2)	93(0.8)	68(5.7)	77(5.5)
Level 200	4	62(2.1)	29(6.9)	37(5.8)	69(2.3)	24(3.4)	38(4.1)
Incomplete, Vague	8	99(0.4)	95(3.4)	93(6.1)	99(0.4)	95(2.2)	96(2.3)
Writing	11	100(0.0)	99(1.0)	97(1.8)	100(0.1)	98(0.8)	99(1.3)
Level 150	4	96(1.1)	81(3.1)	84(6.3)	97(0.3)	77(2.9)	87(3.2)
Disjointed, Unclear	8	100(0.0)	100(0.0)	100(0.0)	100(0.0)	100(0.4)	100(0.4)
Writing	11	100(0.0)	100(0.0)	100(0.0)	100(0.0)	100(0.3)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

At Level 150, there was no change at any grade level between 1984 and 1992 in the performance of White, Black, or Hispanic students. All of the students at grades 8 and 11 as well as 97 percent of the White students, 77 percent of the Black students, and 87 percent of the Hispanic students at grade 4 reached or surpassed this level in 1992.

Likewise, at Level 200, there were no changes at any of the grade levels across the years. In 1992, all or almost all of the White, Black, and Hispanic eighth and eleventh graders (from 95 to 100 percent) reached or surpassed this level. At grade 4, 69 percent of the White students, 24 percent of the Black students, and 38 percent of the Hispanic students reached or surpassed this level.

At Level 250, there were no changes over time. In 1992, 93 percent of White eleventh graders and approximately two-thirds to three-quarters of the Black and Hispanic eleventh graders reached or surpassed this level. At grade 8, 80 percent of the White students and from 58 to 67 percent of the Black and Hispanic students achieved or surpassed this level. The apparent increase in eighth-grade Hispanic performance between 1984 and 1992 (from 47 to 67 percent) was not statistically significant. At grade 4, only 1 to 4 percent of the Black and Hispanic students reached this level, while 17 percent of the White students reached it.

Virtually none of the fourth graders in any racial/ethnic group reached Level 300. For each of the groups, the percentage of eighth graders who reached or surpassed this level increased significantly between 1984 and 1992. In 1992, 28 percent of the White eighth graders, 13 percent of Black eighth graders, and 16 percent of Hispanic eighth graders reached Level 300. At grade 11, there were no changes across time in the percentages of students who reached this level. In 1992, 43 percent of the White students, 10 percent of the Black students, and 20 percent of the Hispanic students performed at or above Level 300. Very small percentages of students at any grade reached the 350 level (from 0 to 2 percent) and there were no significant changes between 1984 and 1992 in their performance at this level.

Trends in Levels of Writing Proficiency from 1984 to 1992 by Gender

Table 11.3 shows the percentages of males and females attaining each of the five levels in both 1984 and 1992.

Table 11.3

Trends in Percentages of Students At or Above Five Writing Proficiency Levels, by Gender, 1984 to 1992

		ASSESSMENT YEARS			
		1984		1992	
Proficiency Levels	**Grade**	**Male**	**Female**	**Male**	**Female**
Level 350	4	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Effective, Coherent	8	0(0.0)	0(0.3)	0(0.2)	3(0.6)
Writing	11	1(0.4)	3(1.5)	1(0.2)	3(0.8)
Level 300	4	0(0.7)	0(0.3)	0(0.1)	1(0.3)
Complete,	8	7(1.5)*	20(3.6)*	15(1.6)	34(1.9)
Sufficient Writing	11	28(1.9)	50(3.8)	26(1.9)	47(2.5)
Level 250	4	9(1.3)	12(2.6)	8(1.1)	18(1.4)
Beginning Focused,	8	61(3.7)	84(2.6)	66(2.5)	84(1.6)
Clear Writing	11	84(1.6)	95(1.1)	83(1.8)	93(1.2)
Level 200	4	50(4.1)	59(3.0)	50(2.0)	67(2.4)
Incomplete, Vague	8	97(1.2)	100(0.7)	96(0.7)	99(0.5)
Writing	11	99(0.4)	100(0.2)	99(0.4)	100(0.1)
Level 150	4	92(1.8)	94(1.8)	90(0.9)	96(0.8)
Disjointed, Unclear	8	100(0.0)	100(0.0)	100(0.2)	100(0.0)
Writing	11	100(0.0)	100(0.0)	100(0.1)	100(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

In 1992, virtually all of the students at grades 8 and 11 as well as 90 percent of the males and 96 percent of the females at grade 4 performed at or above Level 150. Nearly all of the eleventh graders (99 to 100 percent) and the eighth graders (96 to 99 percent) also reached or surpassed Level 200. Fifty percent of the male fourth graders and 67 percent of the females performed at or above Level 200.

At Level 250, while there were no significant changes across time, it should be noted that at all three grade levels, the percentages of females reaching or surpassing this level were significantly higher than the percentages of males — 18 compared to 8 percent at grade 4, 84 compared to 66 percent at grade 8, and 93 compared to 83 percent at grade 11.

This pattern was maintained at Level 300 as well, although virtually no fourth graders reached this level. The percentage of both male and female eighth graders reaching this level significantly increased from 1984 to 1992 from 7 to 15 percent for males and from 20 to 34 percent for females. Just over 25 percent of the eleventh-grade males in either assessment year and approximately 50 percent of the females reached or surpassed Level 300.

From 0 to 3 percent of the eighth and eleventh graders of either gender achieved Level 350, and none of the fourth graders did so.

Summary

In 1992, most of the fourth graders (93 percent) performed at or above Level 150, 58 percent performed at or above Level 200, and 13 percent performed at or above Level 250. There were few significant changes over time in fourth graders' performance — the majority could respond to an assigned writing task in a general way, but few could write focused, clear responses. There were no changes across time in the performance of fourth-grade White, Black, Hispanic, male, or female students. At the lower three levels, White students outperformed Black and Hispanic students. At fourth grade, females outperformed males at every level (except 350, which was beyond the achievement of all fourth graders).

In 1992, nearly all of the eighth graders (98 percent) tended to provide minimal or better responses to assigned writing tasks (Level 200). Seventy-five percent tended to write clear and focused responses (Level 250) and one-fourth were generally able to write more complete responses (Level 300). At Level 300, there was a significant increase in performance between 1984 and 1992, from 13 to 25 percent. This increase indicates that significantly more eighth graders were able to provide clear, focused responses and more complete responses in 1992 than in 1984. A comparison of the performance of White, Black, and Hispanic eighth graders shows no differences between these groups across time at the lower two proficiency levels. At Levels 250 and 300, however, White eighth graders outperformed Black and Hispanic eighth graders. Also, for all three racial/ethnic groups there was a significant increase in the percentage of students able to write complete and adequate responses to assigned writing tasks (Level 300). The same pattern is true for male and female eighth graders. There were no differences between the genders at Level 150, nor were there any changes across time. At the other four levels, however, females outperformed males.

In 1992, at grade 11, virtually all of the students reached Level 200, where they were likely to provide minimal or better responses to assigned writing tasks. Eighty-seven percent tended to write more focused and clear responses (Level 250), 36 percent reached Level 300, and just 2 percent reached Level 350, which was typified by a likelihood of providing effective, coherent responses.

There were no changes across time in the performance of White, Black, and Hispanic eleventh graders at any of the proficiency levels. The performance of the three groups was similar at Level 150, but at Level 200 White students began to outperform Black students, and at Level 250 White students began to outperform Hispanic students as well. There were no performance differences between males and females at Level 150, but greater percentages of females than males performed at or above each of the four other levels.

12

Trends in Aspects of Writing Proficiency

This chapter explores trends in students' responses to the informative, persuasive, and narrative writing tasks they were given. In addition, to examine trends in students' ability to adhere to the conventions of written English, one task at each grade was selected for a detailed analysis of writing mechanics, including spelling, word choice, punctuation, and syntactic errors. The results of this study also are presented here.

National Trends in Informative Writing Achievement from 1984 to 1992

Informative writing is used to convey ideas — to inform others about facts, feelings, or procedures. It can involve simple retelling or reporting as well as more complex analyses or generalizations about experiences or knowledge. We use informative writing when composing a letter, describing a trip we have taken, integrating lecture notes into a written report, and generalizing about lessons we have learned. Informative writing serves many purposes in meeting everyday as well as academic goals and can involve straightforward as well as highly complex thinking.[82]

Of the five informative writing tasks included in the assessment of trends, one required that students write reports based on their personal experience, three required that they write reports based on given information, and one required that they write a report based on an analysis of given information. Together, these tasks reflect some of the diversity of purposes for which informative writing is undertaken.

Figure 12.1 presents data on the percentage of students who performed at or above the minimal and adequate levels of accomplishment for each informative task included in the 1984 and 1992 assessments. Discussion of performance at each level and sample papers are provided following Figure 12.1.

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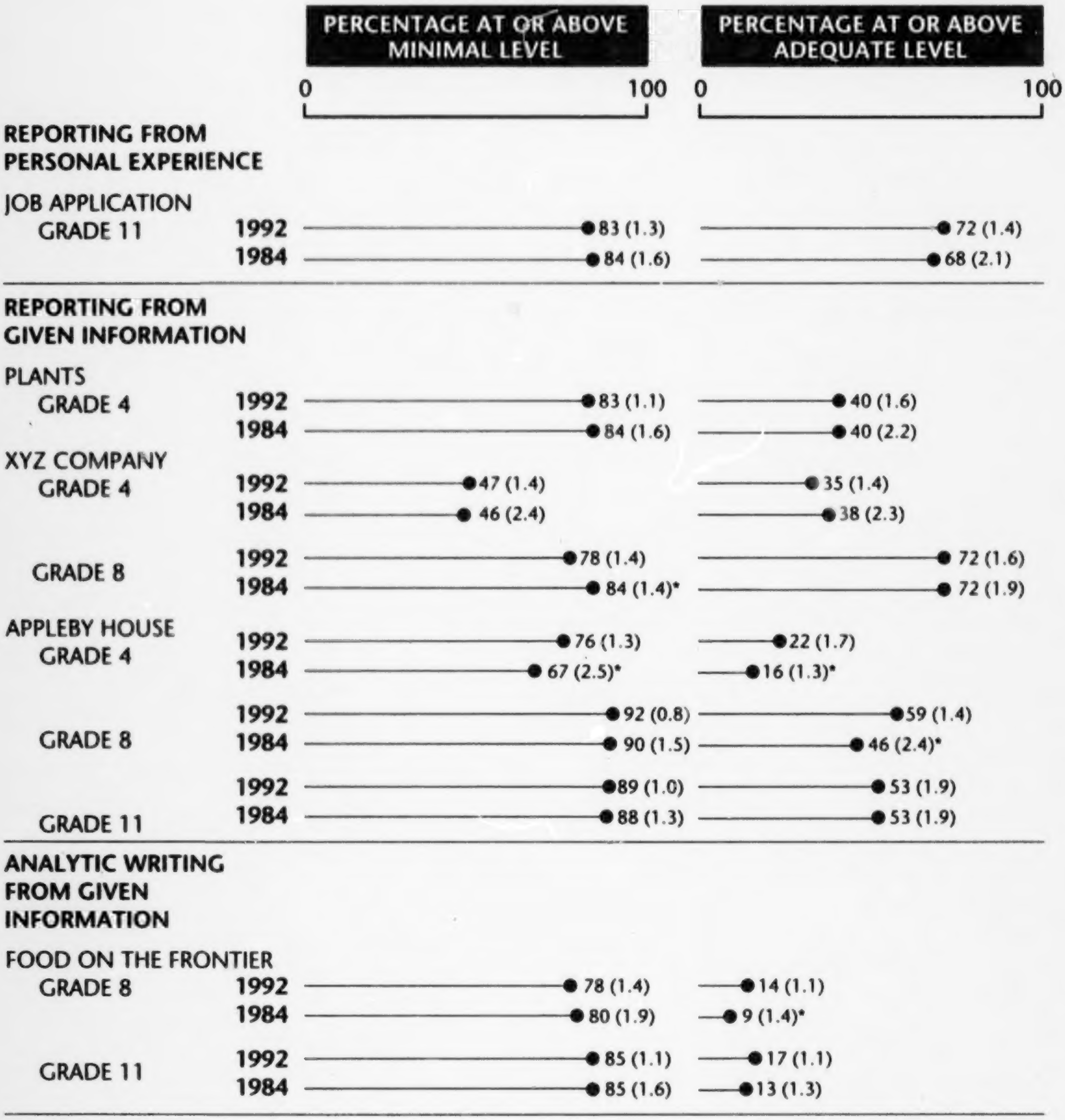
[82] Britton, J., *Prospect and Retrospect: Selected Essays of James Britton*, Pradl, G. M., editor (Montclair, NJ: Boynton/Cook Publishers, Inc., 1982).

FIGURE 12.1

Trends in Informative Writing at Grades 4, 8, and 11



* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

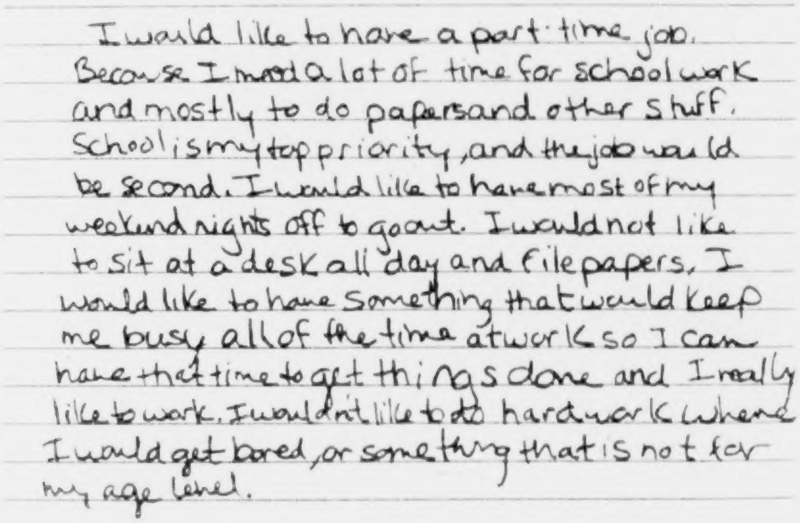
Source: National Assessment of Educationl Progress (NAEP), 1992 Writing Trend Assessment

Reporting from Personal Experience

> *"Job Application" required eleventh-grade students to provide a brief description of a desirable job and to summarize their previous experiences or qualifications for it.*

More eleventh graders provided adequate or better responses to this task than to any other informative task they were assigned. Moreover, in 1992 significantly more eleventh graders (72 percent) wrote responses rated as adequate or better than in 1984 (68 percent). There was no change between 1984 and 1992 in the percentage of students writing minimal or better responses (83 to 84 percent).

As reported in the Data Appendix, 17 percent of the eleventh graders in 1992 provided unsatisfactory responses that did not present any details about the type of job desired. Eleven percent in 1992 received minimal ratings. They provided some detail, but created no organizational framework for the reader to use to fit the parts together. These responses mentioned the kind of job desired, but did not describe relevant hobbies, interests, or past employment. The following student writing sample is typical of the papers rated as minimal.



I would like to have a part-time job.
Becouse I need a lot of time for school work
and mostly to do papersand other stuff.
School is my top priority, and the job would
be second. I would like to have most of my
weekend nights off to go out. I would not like
to sit at a desk all day and file papers. I
would like to have something that would keep
me busy all of the time at work so I can
have that time to get things done and I really
like to work. I wouldn't like to do hardwork where
I would get bored, or something that is not for
my age level.

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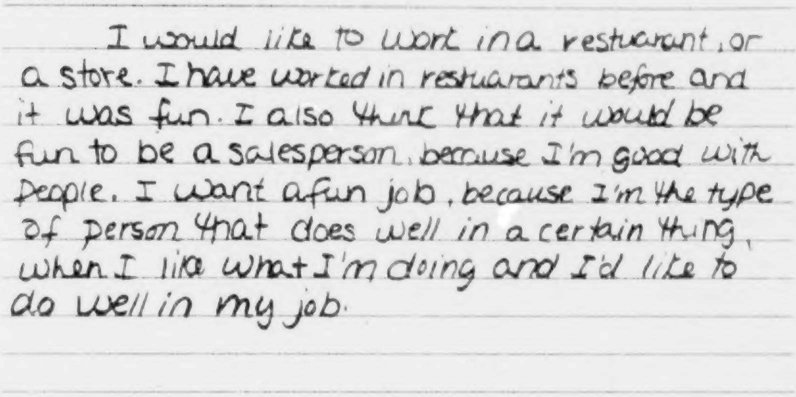
Responses judged as adequate contained some information about the job desired and presented some relevant background information appropriate to the job. Between 1984 and 1992, the percentage of eleventh graders whose papers received an "adequate" rating rose from 65 to 71 percent. The following example is typical of the adequate responses. In contrast, the most successful papers — rated as "elaborated" — provided a full description within a cohesive framework. In these papers, students described the desired job as well as their qualifications and experience, and went beyond the basic elements required in an effort to "sell" themselves. However, in each of the writing assessments 4 percent or fewer were rated as elaborated (see Data Appendix for details).



I would like to work in a restuarant, or a store. I have worked in restuarants before and it was fun. I also think that it would be fun to be a salesperson, because I'm good with people. I want a fun job, because I'm the type of person that does well in a certain thing, when I like what I'm doing and I'd like to do well in my job.

Reporting from Given Information

"Plants" required fourth-grade students to summarize a science experiment depicted in a series of pictures showing different stages of a plant's growth.

"XYZ Company" required fourth- and eighth-grade students to complete a letter explaining that a previously ordered T-shirt had not been received and proposing a course of action.

"Appleby House" required fourth, eighth, and eleventh graders to write a newspaper article based on notes they were given about an unusual haunted house.

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Between 1984 and 1992, there were relatively few variations at each grade level in students' performance on the informative tasks that involved reporting from given information. Overall, in response to the Plants task, there were no significant changes in the percentage of fourth graders whose papers received minimal or better (83 to 84 percent) or adequate or better ratings (40 percent in both assessments).

The XYZ Company task permitted a comparison across grades as well as across time. In both 1984 and 1992, the percentage of minimal or better and adequate or better responses to this task rose, as expected, between grade 4 and grade 8. However, there was no significant change across time in fourth graders' performance on this item (46 to 47 percent). Fewer eighth graders in 1992 than in 1984 wrote minimal or better responses (78 versus 84 percent), but the percentage writing adequate or better responses remained essentially unchanged (73 to 72 percent).

The Appleby House task was given at all three grades. In both 1984 and 1992, nearly 90 percent of the eleventh graders provided responses rated as minimal or better, and 53 percent wrote responses rated as adequate or better. While the quality of responses to this task at grade 11 did not change from 1984 to 1992, the percentage of fourth-grade students who wrote reports at or above the minimal level increased significantly (from 67 to 76 percent), as did the percentage of fourth graders writing at or above the adequate level (from 16 to 23 percent). The percentage of eighth graders writing at or above the adequate level also rose significantly (from 46 to 59 percent), although the percentage at or above the minimal level remained essentially constant (90 to 92 percent).

In the Appleby House task, students were asked to reorganize the information provided and weave it into a report that would help the reader understand what the house was like. Minimal responses often simply enumerated the details in the sequence in which they were given without interrelating them. The following example is typical of the responses that were rated as minimal.

The house with no windows, this is a house with deadend hallways, 36 rooms and stairs leading to the cieling. doorways go nowhere and all this to confuse ghosts.

In 1992, more than half of the eleventh and eighth graders, as well as 22 percent of the fourth graders, provided reports judged as adequate (see Data Appendix for details). These responses tended to be brief, but presented information about the house in a report format, as illustrated by the following example. In contrast, the most successful reports emulated a newspaper article and linked critical details within a cohesive thematic frame in ways that both interested and informed the reader. However, only 2 percent of the eleventh-grade papers and 1 percent of the eighth-grade papers in the 1992 assessment were judged to be elaborated.

Man builds stange house to scare ghosts. He says that he did it to confuse the ghosts. But why we may ask would he want to spend 10 years building a house. For instance there are staires that go nowhere, doors that go nowhere and hallways that go nowhere. This house has 36 rooms. If you ask me I think it is kind of stange

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Analytic Writing

"Food on the Frontier" required eighth- and eleventh-grade students to read a social studies passage about frontier life and then to explain why modern-day food differs from frontier food.

Analytic writing is qualitatively different from the other kinds of informative writing that students were asked to perform. Reporting from personal experience and from given information involves simple descriptions of what happened or what exists, while analytic writing calls for an explanation of why something happened as it did or how the parts fit together.

There was no significant change in performance between 1984 and 1992 at either grade 8 or 11 on this analytic writing task. In the 1984 and 1992 assessments, relatively few students at grades 8 and 11 produced adequate or better pieces of analytic writing from given information. Overall, in 1984, 80 percent of the eighth graders and 85 percent of the eleventh graders appeared to have a grasp of the basic elements of analytic writing, yet only 9 percent and 13 percent, respectively, wrote responses at the adequate level or better. In 1992, the performance level remained essentially the same at both grades, with 78 percent of the eighth graders and 85 percent of the eleventh graders producing minimal or better responses, and 14 percent of the eighth graders and 17 percent of the eleventh graders writing adequate or better responses (see Data Appendix for details).

In 1992, 21 percent of the eighth graders and 14 percent of the eleventh graders provided unsatisfactory responses which either simply repeated information given in the passage or did not reflect an understanding of how to go about the task.

In minimal responses to the Food on the Frontier task, such as the following, students tended to present comparisons but did not provide explanations about cause and effect. In 1992, 65 percent of students at grade 8 and 68 percent of students at grade 11 provided minimal responses.

Today we have many types of Foods. We have meat, vegetables Fruits, + "Junkfood." Back in the pioneer days They were limited ON what they couldeat. They couldn't go to the store + buy twinkies, pop, or chips. through the centuries business's methods, skill, + tools have developed. Today we have so much "artifical" thing in our food. So through all this we were able to expand

Papers judged as adequate provided some explanation for their comparisons, but were either uneven or sparse in their presentation. In 1992, 13 percent of the eighth graders' papers and 16 percent of the eleventh graders' papers were rated as adequate. The following is typical of such responses. In contrast, the few most successful papers (less than 1 percent at both grades) went beyond the basic elements required, weaving their analyses into an organized and elaborated whole.

The difference is that they didn't have as many different kinds of food as we have today because a lot of our stuff is imported from other countries. We buy our food from the supermarket. They either had to hunt for their food or grow it. They could only use the things in their environment.

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Holistic Analyses

Eighth- and eleventh-grade students' responses to Food on the Frontier also were scored holistically, as a way of monitoring trends in writing fluency. As Table 12.1 shows, there was an overall improvement from 1984 to 1992 in the relative fluency of students' responses at both grades 8 and 11. Significantly more eighth graders in 1992 wrote papers judged as "better" in overall fluency compared to the total pool of papers written by other eighth graders (i.e., that received scores of 4, 5, or 6). At the eleventh grade, significantly fewer students in 1992 wrote papers rated as 0 or 1 in fluency and significantly more wrote papers rated as 5 or 6. Also, higher percentages in 1992 than in 1984 wrote "better" papers.

Table 12.1

Trends in Fluency of Informative Writing: Holistic Ratings for "Food on the Frontier" Task

	PERCENTAGE OF STUDENTS			
	Grade 8		Grade 11	
Holistic Rating	**1984**	**1992**	**1984**	**1992**
0	1(0.2)	0(0.1)	1(0.2)*	0(0.1)
1	7(0.7)	5(0.6)	3(0.3)*	2(0.3)
2	18(0.9)	14(1.3)	10(0.9)	8(0.9)
3	37(0.9)	36(1.8)	28(1.0)	26(1.6)
4	27(1.0)*	32(1.6)	35(1.3)	34(1.5)
5	8(0.7)	10(0.9)	17(0.9)*	21(1.3)
6	2(0.3)	2(0.4)	5(0.7)*	9(0.9)
4, 5 or 6	37(1.3)*	45(1.9)	58(1.5)*	64(2.1)
Average Rating	3.2(0.0)*	3.3(0.0)	3.7(0.0)*	3.9(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

National Trends in Persuasive Writing Achievement from 1984 to 1992

Persuasive writing is primarily intended to influence — to change ideas or actions. It is used to convince others of a point of view or a course of action, to refute their arguments, and to defend certain positions or behaviors. Persuasive writing necessitates awareness of the characteristics of one's audience and of ways to influence it.[83] We use persuasive writing in informal notes when we wish to convince a friend to go to one restaurant rather than another, as well as in formal critical essays when we present a tightly structured argument defending our preferred interpretation of a classical play. In all types of persuasive writing, both formal and informal, the writer must take a point of view and support or defend it.

Of the six persuasive tasks administered, three involved writing to convince others to adopt a particular point of view and the other three involved writing to refute an opposing position. Together these tasks reflect the kinds of writing intended to influence others and bring about change. Figure 12.2 presents information on trends in the percentages of students at each grade who performed at or above the minimal and adequate levels for each persuasive task. (It should be noted here that students' responses to persuasive tasks are evaluated not on the specific opinion they contain but on their effectiveness in communicating this opinion and in supporting it with evidence or arguments.)

Writing to Convince Others

> *"Spaceship" required fourth graders to form their own points of view about whether creatures from another planet should be allowed to return home or be detained for scientific study, and to support their points of view in ways that would convince others to agree with them.*
>
> *"Dissecting Frogs" required eighth graders to take a stand on the dissection of frogs in science class, and to discuss and support their views.*
>
> *"Space Program" required eleventh graders to adopt a point of view about whether or not funding for the space program should be reduced, and to write a letter to their senators explaining their position.*

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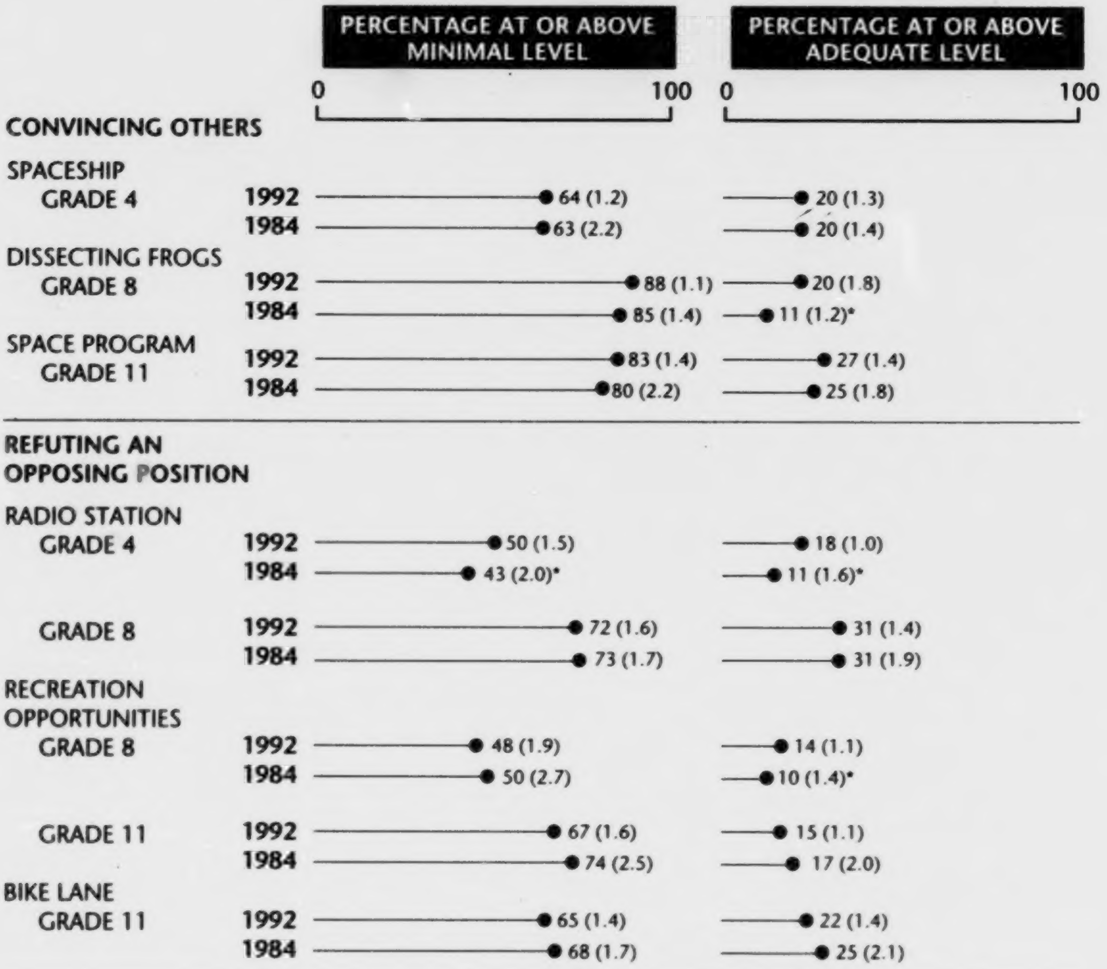
[83] Brewer, W. F., "Literary Theory, Rhetoric, and Stylistics: Implications for Psychology." In *Theoretical Issues in Reading Comprehension*, Spiro, R. J., Bruce, B. C., & Brewer, W. F., editors (Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers, 1980).

FIGURE 12.2

Trends in Persuasive Writing at Grades 4, 8, and 11



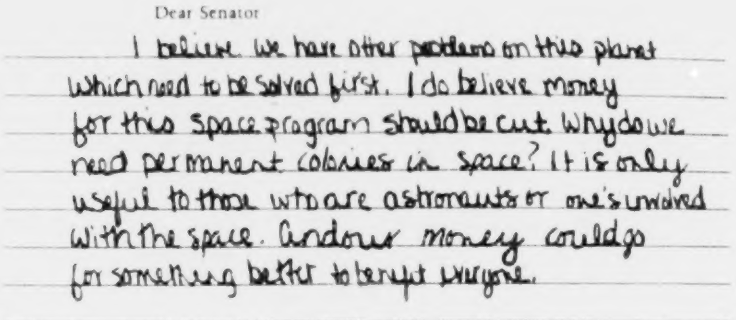
* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

Source: National Assessment of Educationl Progress (NAEP), 1992 Writing Trend Assessment

As reported in Figure 12.2, in both 1984 and 1992 the percentage of students who provided adequate or better responses to these tasks was far smaller than the percentage writing minimal or better responses. These results indicate that, although they appeared able to understand the assignments and present their points of view, students were generally unable to support their ideas.

There was only one significant change across time in students' performance on all three "convincing" tasks — Spaceship, Dissecting Frogs, and Space Program. At the eighth grade, more students performed at the adequate or above level on the Dissecting Frogs task, with 20 percent in 1992 compared to 11 percent in 1984 writing at least adequately about their views on frog dissection. Similar percentages of eighth graders, 88 percent in 1992 and 85 percent in 1984, provided minimal or better responses. On the Spaceship task, in both 1984 and 1992, 20 percent of the fourth graders were able to take a stand and support it adequately, while 64 percent in 1992 and 63 percent in 1984 provided minimal or better responses. The performance of eleventh graders remained relatively constant from 1984 to 1992 on the Space Program task, with 80 to 83 percent writing minimal or better papers and 25 to 27 percent writing papers rated as adequate or better.

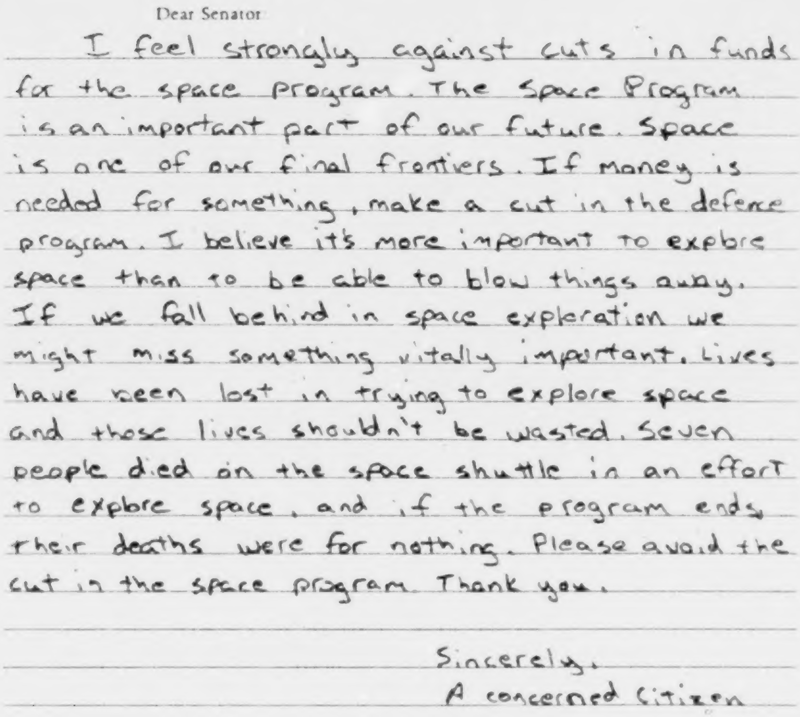
The following examples of persuasive writing were written by eleventh graders in response to the "Space Program" task. Responses that were rated as minimal took a point of view, but did not present reasons for the point of view, nor did they provide convincing evidence that would sway a senator's vote. The following is an example of such a paper.



Dear Senator

I believe we have other problems on this planet
which need to be solved first. I do believe money
for this space program should be cut. Why do we
need permanent colonies in space? It is only
useful to those who are astronauts or one's involved
with the space. And our money could go
for something better to benefit everyone.

Adequate responses supported the point of view presented with some reasoning or examples. In 1992, 26 percent of the students in grade 11 wrote such responses, as exemplified below. The most successful papers, although rare — approximately 1 percent — provided a well-organized argument with supporting evidence (see the Data Appendix for details).



Dear Senator

I feel strongly against cuts in funds for the space program. The Space Program is an important part of our future. Space is one of our final frontiers. If money is needed for something, make a cut in the defence program. I believe it's more important to explore space than to be able to blow things away. If we fall behind in space expleration we might miss something vitally important. Lives have been lost in trying to explore space and those lives shouldn't be wasted. Seven people died on the space shuttle in an effort to explore space, and if the program ends, their deaths were for nothing. Please avoid the cut in the space program. Thank you.

Sincerely,
A concerned Citizen

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Writing to Refute an Opposing Position

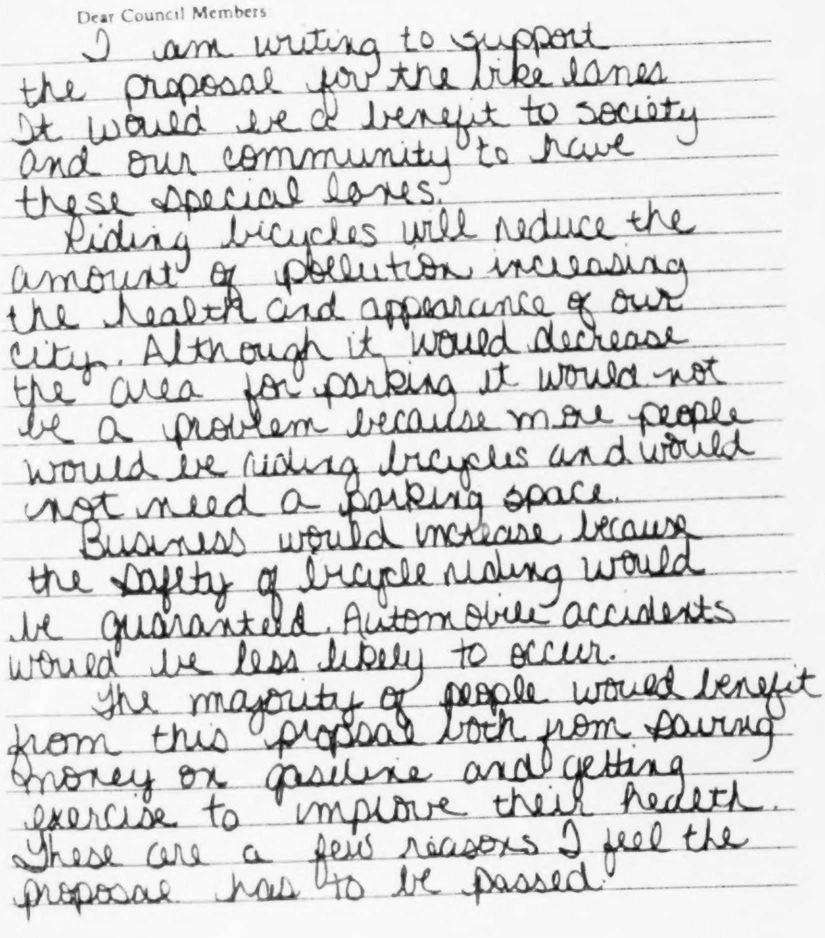
> *"Radio Station" required fourth and eighth graders to provide reasons why their class should be permitted to visit a local radio station despite the manager's specified concerns.*
>
> *"Recreation Opportunities" required eighth and eleventh graders to take a stand on whether their town should purchase a railroad track or a warehouse as a recreation center, to defend their choice, and to refute the alternative choice.*
>
> *"Bike Lane" required eleventh graders to take a stand on whether or not a bike lane should be installed in their locality, and to refute the opposing view.*

As was shown in Figure 12.2, the patterns of student performance on the "refuting" tasks in 1984 and 1992 were similar to those previously observed on the "convincing others" tasks. As might be expected, far more students wrote responses at or above the minimal level than at or above the adequate level, especially at grades 8 and 11, indicating that students were able to take a stand but did not provide sufficient support to refute others' views.

The trend data reveal no significant changes at grade 8 in students' ability to perform on the Radio Station task. In both 1984 and 1992, approximately 72 to 73 percent of eighth graders wrote papers judged as minimal or better and 31 percent wrote papers judged as adequate or better. At grade 4, however, the percentage of students who wrote minimal or better and adequate or better responses to the Radio Station task rose between 1984 and 1992, from 43 to 51 percent, and from 11 to 18 percent, respectively. Although there was no significant change in the percentage of eighth graders who wrote minimal or better responses (48 to 50 percent) to the Recreation Opportunities task, the percentage writing adequate or better responses rose from 10 to 14 percent.

There was a significant decrease from 74 to 67 percent in the percentage of eleventh graders who wrote a minimal or better response to the Recreation Opportunities task, but no significant change in the percentage of students who wrote adequate or better responses (17 to 15 percent). Eleventh graders' performance on the Bike Lane task remained constant from 1984 to 1992 — 68 to 65 percent provided minimal or better responses and 25 to 22 percent adequate or better responses. Overall, in 1992, at least 78 percent of the high school students did not write papers that were adequate or better in response to either the Recreation Opportunities task or the Bike Lane task, and approximately one-third were unable to write papers at the minimal level or better.

As shown in the following example, minimal responses to the Bike Lane task reflected students' inability to appeal to their audiences. These papers tended to state students' views and sometimes provided elaboration, but did not construct a persuasive argument.



Dear Council Members

I am writing to support the proposal for the bike lanes It would be a benefit to society and our community to have these special lanes.

Riding bicycles will reduce the amount of pollution increasing the health and appearance of our city. Although it would decrease the area for parking it would not be a problem because more people would be riding bicycles and would not need a parking space.

Business would increase because the safety of bicycle riding would be guaranteed. Automobile accidents would be less likely to occur.

The majority of people would benefit from this proposal both from saving money on gasoline and getting exercise to improve their health. These are a few reasons I feel the proposal has to be passed.

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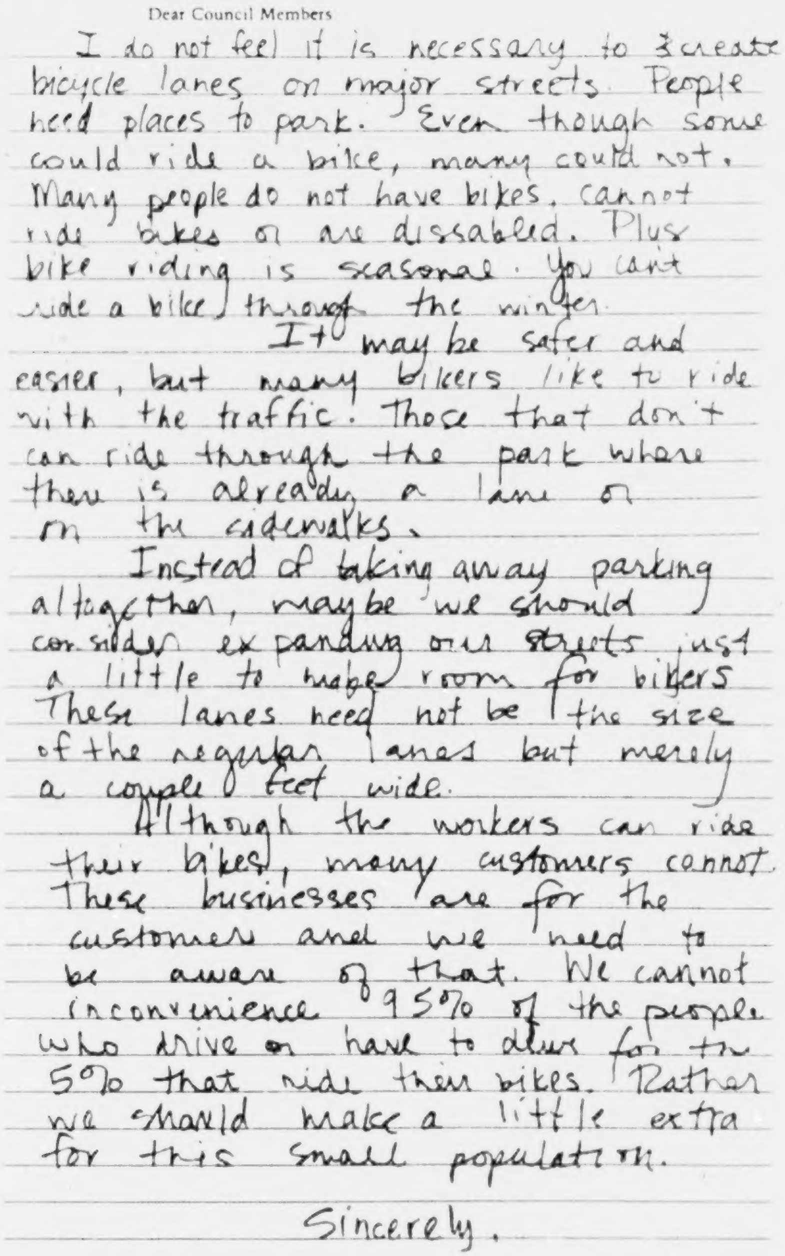
As illustrated by the following example, papers judged as adequate took a stand for or against the proposal and also briefly refuted some aspect of the opposing ideas. In comparison, the 1 percent of the papers judged as elaborated went beyond arguing for a particular point of view to present an interrelated set of reasons to support students' positions; they also responded to the explicit concerns of their opponents.



Dear Council Members

I do not feel it is necessary to 3create bicycle lanes on major streets. People need places to park. Even though some could ride a bike, many could not. Many people do not have bikes, cannot ride bikes or are dissabled. Plus bike riding is seasonal. You can't ride a bike through the winter.

It may be safer and easier, but many bikers like to ride with the traffic. Those that don't can ride through the park where there is already a lane or on the sidewalks.

Instead of taking away parking altogether, maybe we should consider expanding our streets just a little to make room for bikers These lanes need not be the size of the regular lanes but merely a couple feet wide.

Although the workers can ride their bikes, many customers cannot. These businesses are for the customers and we need to be aware of that. We cannot inconvenience 95% of the people who drive or have to drive for the 5% that ride their bikes. Rather we should make a little extra for this small population.

Sincerely.

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Holistic Analyses

The responses of fourth graders to the Spaceship task and of eighth- and eleventh-grade students to the Recreation Opportunities task were analyzed holistically to evaluate differences in students' relative fluency in persuasive writing. As Table 12.2 indicates, there was a significant decline in the number of fourth-grade responses that received low fluency ratings (0 or 1). The relative fluency of eighth graders' responses showed signs of improvement, with significantly fewer students receiving low ratings (0, 1, or 2) and more students receiving fluency ratings of 5, as well as more students receiving combined ratings of 4, 5, or 6. At grade 11, there was essentially no change between 1984 and 1992 in writing fluency on this task.

Table 12.2

Trends in Fluency of Persuasive Writing: Holistic Ratings for "Spaceship" and "Recreation Opportunities" Tasks

	PERCENTAGE OF STUDENTS					
	Spaceship		Recreation Opportunities			
	Grade 4		Grade 8		Grade 11	
Holistic Rating	1984	1992	1984	1992	1984	1992
0	4(0.6)*	0(0.0)	1(0.2)*	0(0.1)	2(0.3)*	0(0.0)
1	14(0.9)*	11(1.0)	7(0.6)*	4(0.8)	2(0.3)	2(0.5)
2	27(1.1)	29(1.4)	16(0.9)*	12(1.2)	7(0.6)	8(0.9)
3	36(1.1)	38(1.6)	38(1.4)	35(1.6)	28(1.3)	27(1.3)
4	15(0.9)	17(1.1)	27(1.3)	30(1.7)	38(1.2)	41(1.5)
5	3(0.4)	5(0.7)	8(0.7)*	14(1.2)	18(1.0)	17(1.0)
6	1(0.3)	1(0.3)	3(0.3)	4(0.7)	6(0.6)	6(0.7)
4, 5, or 6	19(1.0)	23(1.4)	38(1.4)*	48(2.1)	62(1.4)	64(1.9)
Average Rating	2.5(0.0)*	2.8(0.0)	3.2(0.0)*	3.5(0.0)	3.8(0.0)	3.8(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

National Trends in Narrative Writing Achievement from 1984 to 1992

Narrative writing allows us to participate in literary experiences. Whether writing personal stories of pain and triumph or fictional tales of interplanetary visits, the goal is to create a momentary reality that is apart from the everyday.[84] As with the other types of writing, narrative writing can be more or less formal, academic, or complex.

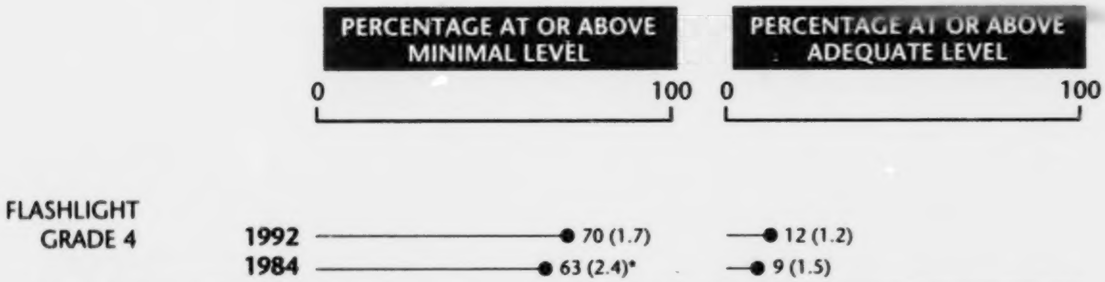
The following narrative writing task was presented at grade 4 in the 1984 and 1992 writing trend assessments.

> *"Flashlight" required fourth graders to write a story about their imagined adventures with a flashlight that has special powers.*

The percentages of students who wrote papers that were judged minimal or better and adequate or better in 1984 and 1992 are provided in Figure 12.3.

FIGURE 12.3

Trends in Narrative Writing at Grade 4

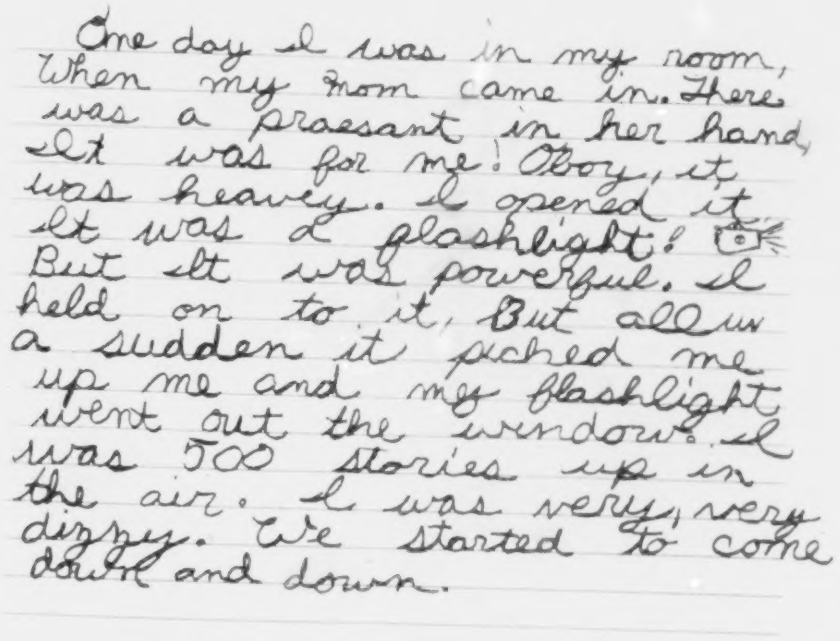


* Statistically significant difference from 1992 at about the 95 percent confidence level. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

Source: National Assessment of Educationl Progress (NAEP), 1992 Writing Trend Assessment

In both the 1984 and 1992 assessments, fourth graders found it difficult to write well-developed stories. In 1984, 63 percent of these students seemed to grasp the basic elements of storytelling, but only 9 percent were able to develop their stories successfully. The 1992 data indicate some progress in story writing, as 70 percent wrote stories rated at or above the minimal level.

Students providing responses at the minimal level seemed to understand the narrative character of the Flashlight task, but were unable to carry it out. At this level, students attempted a story, but provided only a bare outline with little detail. Sometimes they rambled or offered lists of details or events, with no point or structure. The following is an example of a paper rated as minimal.



One day I was in my room,
When my mom came in. There
was a praesant in her hand,
It was for me! Oboy, it
was heavey. I opened it
It was a flashlight!
But It was powerful. I
held on to it, But all in
a sudden it piched me
up me and my flashlight
went out the window. I
was 500 stories up in
the air. I was very, very
dizzy. We started to come
down and down.

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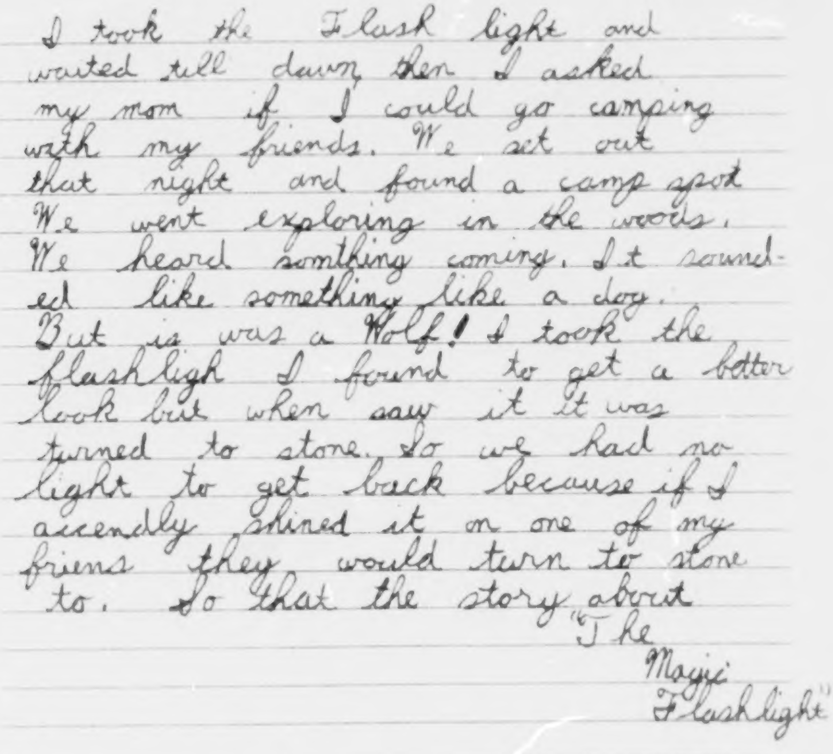
The following is an example of an adequate paper. This type of response reflected the storyteller's obligation to develop a plot and elaborate it with details, including events, characters, and setting. However, the plots were not as explicit nor as clearly developed as in the elaborated stories.



I took the Flash light and waited till dawn then I asked my mom if I could go camping with my friends. We set out that night and found a camp spot We went exploring in the woods. We heard somthing coming. It sounded like something like a dog. But is was a Wolf! I took the flashligh I found to get a better look but when saw it it was turned to stone. So we had no light to get back because if I accendly shined it on one of my friens they would turn to stone to. So that the story about

"The
Magic
Flashlight"

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Holistic Analyses

As shown in Table 12.3, the relative fluency of fourth graders' written responses to the Flashlight task changed only slightly at the extreme ends, with fewer students writing stories that received the lowest fluency score (0) and more writing stories that received the highest score (6). The percentage writing "better" narrative papers remained similar between 1984 and 1992, from 34 to 38 percent.

Table 12.3

Trends in Fluency of Imaginative Writing: Holistic Ratings for "Flashlight" Task

	PERCENTAGE OF STUDENTS	
	Grade 4	
Holistic Rating	1984	1992
0	1(0.2)*	0(0.0)
1	10(0.7)	9(1.1)
2	25(1.3)	25(1.8)
3	30(1.2)	28(1.7)
4	22(1.0)	21(1.8)
5	9(0.7)	11(1.2)
6	3(0.3)*	6(0.8)
4, 5 or 6	34(1.5)	38(2.0)
Average Rating	3.0(0.0)	3.2(0.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment.

National Trends in Grammar, Punctuation, and Spelling from 1984 to 1992

To examine students' abilities to adhere to the conventions of written English, one task at each grade was selected for further analysis. The tasks chosen were Spaceship at grade 4 and Recreation Opportunities at grades 8 and 11. Nationally representative subsamples of papers were drawn from the total national sample to permit a detailed analysis of writing mechanics. In addition to measures of overall quality, each paper was analyzed for a variety of aspects of spelling, word choice, punctuation, and syntax.

Trends in Overall Characteristics of the Papers

As students gain control of written English, they should be able to use a larger number of words in a growing number of sentences, with relatively greater ease and fewer errors.[85] Table 12.4 summarizes trends in the general characteristics of the papers at each grade, giving the averages and standard errors for each grade. Since the fourth-grade data are based on a different writing task, comparisons of the results for grade 4 to those for grades 8 and 11 are not appropriate. Table 12.4 also includes the average results for male and female, and Black and White students. For a presentation of these results by percentiles, see the Data Appendix.

Please note that the procedures for drawing the national sample included procedures for enabling reporting for Black as well as White students, and for males and females. However, the smaller sample size used for the mechanics analysis did not permit reporting for other subpopulations.

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[85] Pringle, I. & Freedman, A., *A Comparative Study of Writing Abilities in Two Modes at the Grade 5, 8 and 12 Levels* (Toronto, Ontario: The Minister of Education, Ontario, 1985).

Table 12.4

Trends in Overall Characteristics of Papers for the Nation and Demographic Subpopulations, 1984 to 1992

				RACE/ETHNICITY		GENDER	
	Grade	Year	Overall Average	White	Black	Male	Female
Number of Words	4	1992	35(0.9)	35(1.0)	34(1.8)	30(1.0)	40(1.2)
		1984	34(1.0)	34(1.2)	32(2.6)	30(1.2)	38(1.4)
	8	1992	79(2.8)	82(3.7)	73(3.2)	66(3.4)	91(3.5)
		1984	68(1.9)*	70(2.1)	58(4.2)	60(2.3)	76(2.8)
	11	1992	100(2.3)	102(2.7)	87(3.3)	86(4.1)	115(2.9)
		1984	93(2.3)	97(3.0)	81(3.8)	81(2.5)	106(3.6)
Word Length	4	1992	4(0.0)	4(0.0)	4(0.1)	4(0.0)	4(0.0)
		1984	4(0.0)	4(0.0)	4(0.1)	4(0.0)	4(0.0)
	8	1992	4(0.0)	4(0.0)	4(0.0)	4(0.1)	4(0.0)
		1984	4(0.0)	4(0.0)	4(0.0)	4(0.0)	4(0.0)
	11	1992	4(0.0)	4(0.0)	4(0.0)	4(0.0)	4(0.0)
		1984	4(0.0)	4(0.0)	4(0.0)	4(0.0)	4(0.0)
Number of Sentences	4	1992	3(0.1)	3(0.1)	2(0.2)	2(0.1)	3(0.1)
		1984	3(0.1)	3(0.1)	2(0.3)	2(0.1)	3(0.2)
	8	1992	5(0.2)	5(0.3)	5(0.2)	4(0.2)	6(0.3)
		1984	4(0.1)*	5(0.2)	4(0.3)*	4(0.2)	5(0.2)
	11	1992	6(0.2)	6(0.2)	5(0.3)	5(0.3)	7(0.2)
		1984	6(0.2)	6(0.2)	4(0.2)*	5(0.2)	6(0.2)
Number of Words Per Sentence	4	1992	16(0.4)	16(0.5)	17(0.9)	16(0.5)	16(0.6)
		1984	15(0.4)	15(0.5)	16(0.6)	15(0.6)	15(0.5)
	8	1992	18(0.8)	18(1.0)	19(0.8)	19(1.5)	17(0.4)
		1984	17(0.4)	17(0.3)	19(1.2)	18(0.7)	16(0.4)
	11	1992	18(0.4)	17(0.5)	19(0.5)	18(0.6)	17(0.5)
		1984	18(0.4)	18(0.5)	21(0.7)	19(0.8)	17(0.5)
Number of Errors	4	1992	5(0.2)	5(0.3)	6(0.4)	5(0.2)	6(0.3)
		1984	5(0.2)	4(0.2)	6(0.5)	4(0.3)	5(0.3)
	8	1992	7(0.2)	7(0.3)	8(0.5)	7(0.3)	8(0.4)
		1984	6(0.2)*	6(0.2)	6(0.5)	5(0.2)	6(0.3)
	11	1992	6(0.2)	6(0.2)	7(0.4)	6(0.3)	7(0.3)
		1984	6(0.2)	6(0.2)	6(0.5)	6(0.2)	6(0.3)
Number of Errors Per 100 Words	4	1992	17(0.5)	16(0.8)	20(1.2)	19(0.7)	15(0.7)
		1984	16(0.6)	14(0.7)	20(1.2)	17(1.0)	14(0.8)
	8	1992	11(0.7)	10(0.4)	12(0.7)	13(1.3)	9(0.4)
		1984	9(0.3)	8(0.4)	13(1.0)	10(0.5)	8(0.4)
	11	1992	8(0.4)	7(0.4)	9(0.5)	9(0.8)	6(0.3)
		1984	7(0.2)	6(0.2)	8(0.4)	8(0.3)	6(0.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated values appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

At grade 4, papers written in 1992 were about the same length (number of words) as those written in 1984. At grade 8, the 1992 papers were significantly longer than those of 1984, whereas at eleventh grade the slight increase in length was not significant. Word length (an index of vocabulary) and average number of words per sentence (an index of sentence complexity) showed no significant changes between 1984 and 1992 at any of the three grades. The average number of sentences written by eighth graders increased significantly from 1984 to 1992, while the number of sentences written by fourth and eleventh graders remained the same. The number of errors increased significantly between 1984 and 1992 at grade 8, but did not change significantly at grades 4 and 11. The number of errors per 100 words (error rate) did not change significantly at any grade level. Because students' responses represent first-draft writing, it is reasonable to expect some errors in their papers. It may be that error rates would be even lower if students had been given more time to look for and correct their errors.

An examination of trends in the overall characteristics of papers by gender and race/ethnicity reveals that between 1984 and 1992 there was a significant increase in the average number of sentences in papers written by Black eighth and eleventh graders. The error rate and the actual number of errors did not change significantly for any race/ethnicity or gender subgroup.

Trends in Control of Sentence Structure

Students' control of syntax is reflected in the types of errors found in the sentences they create. To examine changes across time in students' command of sentence structure, four types of sentence errors — run-ons, fragments, awkward sentences, and sentences with agreement errors — were marked in the 1984 and 1992 papers.

Table 12.5 presents the average percentage of sentence-level errors per student for grades 4, 8, and 11. For the overall population, and the race/ethnicity and gender groups, there were no significant changes across time at any grade in the percentage of papers containing run-on sentences or sentence fragments. At grade 4, the percentage of awkward sentences increased for White students. At all three grade levels, there was a marked increase in the percentage of sentences with agreement errors for all race/ethnicity and gender groups, although the apparent increase for Black fourth graders and White eleventh graders was not statistically significant.

Table 12.5

Trends in Sentence-Level Errors for the Nation and Demographic Subpopulations, 1984 to 1992

				RACE/ETHNICITY		GENDER	
	Grade	Year	Overall Average	White	Black	Male	Female
Percentage Run-on Sentences	4	1992	13(1.6)	11(1.7)	18(2.9)	13(2.3)	14(2.3)
		1984	15(1.5)	15(1.5)	11(2.5)	14(2.0)	17(2.2)
	8	1992	8(0.9)	8(1.1)	12(1.9)	9(1.5)	7(1.0)
		1984	7(0.9)	6(0.9)	8(2.4)	8(1.4)	6(1.0)
	11	1992	5(0.9)	5(1.1)	8(1.4)	5(0.9)	5(1.2)
		1984	5(0.7)	5(0.8)	5(1.6)	5(1.1)	4(0.9)
Percentage Sentence Fragments	4	1992	4(0.5)	4(0.6)	8(1.2)	5(0.8)	4(0.6)
		1984	3(0.5)	3(0.6)	4(1.4)	3(0.8)	3(0.6)
	8	1992	4(0.6)	3(0.5)	7(2.0)	5(1.0)	4(0.7)
		1984	3(0.5)	3(0.5)	5(1.4)	4(0.9)	3(0.5)
	11	1992	4(0.8)	4(0.6)	5(1.2)	5(1.3)	4(0.6)
		1984	3(0.4)	2(0.4)	5(1.1)	4(0.8)	2(0.5)
Percentage Sentences with Agreement Errors	4	1992	11(1.3)	9(1.7)	17(2.7)	12(1.9)	10(1.4)
		1984	4(0.7)*	3(0.7)*	8(2.3)	3(0.7)*	4(1.1)*
	8	1992	8(0.7)	7(0.8)	15(2.2)	9(1.0)	8(1.0)
		1984	3(0.6)*	3(0.7)*	3(1.3)*	3(0.8)*	3(0.9)*
	11	1992	7(0.7)	5(0.5)	15(1.7)	8(1.0)	7(0.9)
		1984	3(0.5)*	3(0.7)	3(0.8)*	4(1.0)*	1(0.3)*
Percentage Awkward Sentences	4	1992	32(1.9)	29(2.4)	44(4.1)	33(2.9)	32(2.4)
		1984	25(2.2)	20(2.1)*	45(5.5)	26(2.6)	25(2.7)
	8	1992	32(1.4)	28(1.9)	42(2.5)	33(2.3)	30(1.2)
		1984	32(1.5)	28(1.7)	50(4.9)	34(2.5)	30(1.8)
	11	1992	26(1.4)	24(1.8)	31(2.3)	28(2.2)	25(1.5)
		1984	31(1.7)	28(1.7)	39(5.2)	35(2.4)	27(2.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

The results by percentile reveal that three-quarters of the papers at grades 4, 8, and 11 contained virtually no fragment errors and three-quarters of the 8th- and 11th-grade papers contained virtually no run-on sentences. At grade 4, the amount of run-on sentences in papers in the 75th percentile appears to have decreased significantly between 1992 and the earlier assessment years. The magnitude of this decrease is, in part, due to the small number of papers at this level — changes in a small number of papers have a large effect on the total.

This also explains the change in the percentage of sentences with agreement errors in the 75th and 90 percentiles. An additional explanation can be found in the way the agreement statistic is derived. If a paper with only two or three sentences has an agreement error in one sentence, the agreement rate will appear high for that paper, although only one error has been made. It is important to remember that students' responses to the assessment are first draft writing. There is little time within the assessment period for students to proofread their work. Therefore, a certain number of sentence-level errors, as well as other types of errors, can be expected.

Trends in Control of Word-Level Conventions

Students' control of word-level conventions is reflected in their spelling, capitalization, and word choice errors, which are summarized in Table 12.6. Across the grades, the percentages of misspelled words in students' papers were similar in 1984 and 1992. Students in grade 4 misspelled an average of 9 percent of the words they used, and even the better spellers (the 25 percent whose papers had the fewest misspellings) misspelled up to 3 percent of their words in 1992. At grade 11, students averaged only 2 percent misspellings overall, and the best spellers had essentially no spelling errors (see the Data Appendix for the results by percentiles). Errors in word choice and capitalization were rare across the grades, and there were only slight changes between the 1984 and 1992 assessments.

In the Data Appendix, these data are presented separately for papers rated as "good" and "poor." As with the results for students' papers overall, errors in capitalization and word choice were relatively rare in both "good" and "poor" papers.

Table 12.6

Trends in Word-Level Errors for the Nation and Demographic Subpopulations, 1984 to 1992

				RACE/ETHNICITY		GENDER	
		Year	Overall Average	White	Black	Male	Female
Percentage Misspelled Words	4	1992	9(0.4)	9(0.5)	9(0.8)	10(0.5)	8(0.5)
		1984	8(0.4)	8(0.6)	10(1.0)	9(0.7)	7(0.5)
	8	1992	4(0.2)	4(0.2)	4(0.5)	5(0.3)	3(0.2)
		1984	4(0.2)	4(0.2)	4(0.5)	4(0.4)	3(0.2)
	11	1992	2(0.2)	3(0.2)	3(0.4)	3(0.3)	2(0.1)
		1984	2(0.1)	2(0.1)	2(0.2)	3(0.2)	2(0.2)
Percentage Word Choice Errors	4	1992	1(0.1)	1(0.1)	1(0.1)	1(0.1)	1(0.1)
		1984	1(0.1)	1(0.1)	2(0.4)*	1(0.1)	1(0.1)
	8	1992	1(0.1)	1(0.1)	1(0.1)	1(0.1)	1(0.1)
		1984	1(0.1)	1(0.1)	1(0.4)	1(0.1)	1(0.1)
	11	1992	1(0.0)	0(0.0)	1(0.1)	1(0.1)	1(0.1)
		1984	1(0.1)	1(0.1)	1(0.2)	1(0.1)	1(0.1)
Percentage Capitalization Errors	4	1992	1(0.1)	1(0.1)	2(0.2)	1(0.1)	1(0.1)
		1984	1(0.1)	1(0.1)	1(0.2)*	1(0.1)	1(0.2)
	8	1992	1(0.4)	1(0.1)	1(0.1)	2(0.7)	1(0.1)
		1984	0(0.1)	0(0.1)*	1(0.2)	0(0.1)	0(0.1)*
	11	1992	1(0.1)	1(0.1)	1(0.2)	1(0.2)	0(0.1)
		1984	0(0.0)*	0(0.0)*	0(0.1)	0(0.1)*	0(0.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Trends in Control of Punctuation

Punctuation was analyzed in terms of both the particular marks that students used correctly or incorrectly and the marks that should have been used when punctuation was omitted. Trends in punctuation uses and omissions are summarized in Table 12.7.

The patterns of punctuation errors found in the 1992 papers were comparable to those found in the 1984 papers. In general, most students made few errors in punctuation, although in 1992 the 10 percent most error-prone papers had three or more punctuation errors per 100 words even at grade 11 (see the Data Appendix for results by percentiles).

For White students at grade 8, there was a slight, although statistically significant, increase in punctuation omitted. At grades 8 and 11, there was a decrease in punctuation omitted by Black students.

Table 12.7

Trends in Punctuation Errors for the Nation and Demographic Subpopulations, 1984 to 1992

				RACE/ETHNICITY		GENDER	
	Grade	Year	Overall Average	White	Black	Male	Female
Total Punctuation Errors Per 100 Words	4	1992	3(0.2)	3(0.2)	3(0.4)	3(0.2)	2(0.2)
		1984	3(0.2)	2(0.3)	3(0.5)	3(0.3)	3(0.3)
	8	1992	2(0.1)	2(0.1)	2(0.2)	2(0.1)	2(0.2)
		1984	2(0.1)	2(0.1)	3(0.4)	2(0.2)	2(0.2)
	11	1992	1(0.1)	1(0.1)	2(0.1)	1(0.1)	1(0.1)
		1984	2(0.1)	2(0.2)	2(0.1)	2(0.2)	2(0.2)
Punctuation Omitted Per 100 Words	4	1992	2(0.1)	2(0.2)	3(0.4)	2(0.2)	2(0.1)
		1984	2(0.2)	2(0.2)	3(0.4)	2(0.3)	2(0.3)
	8	1992	2(0.1)	2(0.1)	1(0.1)	2(0.1)	1(0.1)
		1984	1(0.1)*	1(0.1)*	2(0.4)*	1(0.1)	1(0.1)
	11	1992	1(0.1)	1(0.1)	1(0.1)	1(0.1)	1(0.1)
		1984	1(0.1)	1(0.1)	2(0.1)*	1(0.2)	1(0.2)
Wrong Punctuation Per 100 Words	4	1992	0(0.1)	0(0.1)	0(0.1)	0(0.1)	0(0.1)
		1984	0(0.1)	0(0.1)	1(0.3)	0(0.1)	0(0.1)
	8	1992	0(0.1)	0(0.1)	0(0.1)	0(0.1)	0(0.1)
		1984	1(0.1)	1(0.1)	0(0.1)	1(0.1)	0(0.1)
	11	1992	0(0.0)	0(0.0)	0(0.1)	0(0.1)	0(0.0)
		1984	0(0.0)	0(0.0)	1(0.1)	0(0.1)	0(0.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Summary

Trends in Informative Writing.

Trends in students' responses to the five informative writing tasks reveal few changes across time. In 1992, 72 percent of the eleventh graders were able to write from personal experience and supply adequate information for a job application, which represented an increase from 68 percent in 1984. However, when asked to write an adequate newspaper report from given information, only 53 percent of the eleventh graders in either 1984 or 1992 were able to do so.

Eighth graders responded to two informative tasks involving creating reports from given information. In both 1984 and 1992, 72 percent were able to produce adequate reports to the XYZ Company task, explaining about a T-shirt that was never received. For the newspaper report, 59 percent produced adequate responses in 1992 — a significant improvement from the 46 percent in 1984.

Likewise at grade 4, more students produced adequate newspaper reports in 1992 than in 1984, 23 versus 16 percent. However, the 40 percent adequately summarizing a plant experiment remained constant between 1984 and 1992, as did the percentage providing adequate reports to the XYZ Company task (38 to 35 percent).

Some improvement was found in analytic writing. In 1992, at the eighth and eleventh grades, fewer than one-fifth of the students wrote adequate or better responses, which represented no significant change since 1984. However, at both grades there was a significant increase in the percentage of students writing more fluent papers, from 37 to 45 percent at grade 8 and from 58 to 64 percent at grade 11.

Trends in Persuasive Writing.

For the persuasive tasks that asked students to convince others to adopt a point of view or to refute an opposing point of view, improvements were observed from 1984 to 1992 at grades 4 and 8, but not at grade 11. While 20 percent of the fourth graders in both 1984 and 1992 provided adequate responses to a task requiring a convincing letter (Spaceship), the percentage writing adequately to refute an opposing point of view (Radio Station) rose from 11 to 18 percent. At grade 8, adequate performance increased on two of three tasks. More eighth graders wrote a convincing letter about frog dissection (20 versus 11 percent) and more refuted a position about recreation opportunities (14 versus 10 percent). Also, there was improvement in the fluency of eighth graders' writing on this task.

At grade 11, there was a decline in students' minimal performance on one of the refutation tasks, from 74 percent in 1984 to 67 percent in 1992. In 1992, the vast majority of high school juniors did not write persuasive papers that were judged adequate to influence others or to move them to action.

Trends in Narrative Writing.

Overall, fourth-grade students had difficulty writing well-developed stories. In 1992, 70 percent of the students at grade 4 performed at the minimal level or better, providing responses that at least attempted the basic task of storytelling. This represented an increase from the 63 percent providing minimal or better narratives in 1984. Twelve percent in 1992 were able to develop their stories, structuring a plot and supplying appropriate details. This result was comparable to 1984 (9 percent). Similar to the results for informative and persuasive writing, the narrative writing achievement of students was relatively low.

Trends in Grammar, Punctuation, and Spelling.

Detailed analyses of the performance of fourth, eighth, and eleventh graders suggest that there have been few changes in students' mastery of English language conventions between 1984 and 1992. In both 1984 and 1992, most students were able to control the conventions of written English. Although fourth graders had difficulties with spelling and with some aspect of grammar and usage, most of these problems disappeared by grade 11. At grade 8, there was a significant increase in the length of student responses. However, there was an increase in the number of errors in eighth-grade papers, as well as an increase in the percentage of agreement errors at all three grades. Generally, the errors that were most frequent for a particular group of students or at a particular grade level were found in the papers written by only a small proportion of those students.

13

Trends in Attitudes, Writing Behaviors, and Instruction

Introduction

In addition to providing responses to various writing tasks, students participating in the 1984 and 1992 writing assessments were asked to complete a series of questions related to their attitudes toward writing, their abilities to manage the writing process, and their instructional environments. This chapter summarizes trends in students' responses to these questions.

Learning to Value Writing

One of the key goals of writing instruction is to encourage students to see writing as a useful tool for their lives both in and out of school, and to think of themselves as writers.[86] As a way of measuring trends in students' attitudes towards writing, different sets of questions in the 1984 and 1992 assessments asked students about the value they placed on writing, their attitudes toward their writing, the ways in which they used writing in their lives, and the kinds of writing they encountered in their home environments.

The first set of questions concerns the value students place on writing. Fourth graders were asked one set of questions and eighth and eleventh graders another set. Fourth graders were asked to what extent they agreed with statements such as "Writing helps me share my ideas" and "Writing helps me show that I know things." Their responses are presented in Table 13.1.

At the fourth grade, there was a significant increase in the percentage of students who thought the following statements were true more than half the time: "Writing helps me share my ideas" and "Writing helps me get a good job." No significant differences in writing proficiency occurred between students who found the value statements true more than half the time and those who found them true never or hardly ever.

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[86] Odell, L. & Goswami, D., "Writing in a Nonacademic Setting" In R. Beach and L. S. Bridwell, *New Directions in Composition Research* (New York, NY: The Guilford Press, 1984).

Table 13.1

Trends in the Value Placed on Writing, Grade 4, 1984 to 1992

		HOW OFTEN FOURTH GRADERS FIND STATEMENTS TO BE TRUE							
		More Than Half the Time		About Half the Time		Once in a While		Never or Hardly Ever	
Writing helps me . . .	Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Share my ideas	1992	67(1.6)	207(2.3)	14(1.0)	205(5.8)	10(1.0)	211(5.6)	8(0.9)	198(5.9)
	1984	52(4.1)*	203(6.0)	19(2.6)	212(6.6)	15(3.1)	209(8.0)	12(2.1)	189(13.0)
Show I know things	1992	68(2.0)	207(2.3)	15(1.5)	206(3.6)	10(1.6)	205(6.9)	7(1.1)	203(7.1)
	1984	62(4.0)	203(3.5)	14(2.9)	208(7.6)	14(3.1)	207(8.8)	10(2.6)	196(13.7)
Keep in touch with friends	1992	65(1.6)	208(2.6)	11(1.8)	205(8.2)	10(1.9)	199(11.4)	11(1.4)	199(5.9)
	1984	64(3.4)	204(5.0)	8(1.1)	207(6.1)	15(1.1)	208(4.0)	13(3.1)	205(10.2)
Get a good job	1992	52(2.0)	204(2.5)	15(1.8)	212(5.5)	21(1.4)	209(2.8)	12(1.4)	208(6.7)
	1984	33(3.2)*	198(6.9)	20(2.9)	209(7.8)	28(2.8)	210(5.5)	18(3.1)	200(6.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Eighth and eleventh graders were asked to what extent they agreed with statements such as "Writing helps me think more clearly," "Writing helps me tell others what I think," and "People who write well have a better chance of getting good jobs." Their responses are presented in Table 13.2.

For eighth graders, there were no significant differences between 1984 and 1992 in their responses to questions about the value of writing. At the eleventh grade, significantly more students in 1992 compared with 1984 believed the following statements to be true more than half the time: "People who write well have a better chance of getting good jobs" and "People who write well are more influential." Also, at grade 11 significantly fewer students reported agreeing less than half the time that "People who write well are more influential."

In comparing the writing performance of eighth- and eleventh-grade students who seemed to value writing (they agreed with the statements more than half the time) and those who did not (they never or hardly ever agreed with the statements), significant differences were found for several value statements. In 1992, at grade 8, students who thought that writing helps them think more clearly, tell others what they feel, and understand their own feelings more than half the time had significantly higher writing proficiency that did students who never or hardly ever found these statements to be true.

At grade 11, students who thought that writing helps them think more clearly and that people who write well have a better chance of getting a good job more than half the time outperformed students who never or hardly ever found these statements to be true.

Table 13.2

Trends in the Value Placed on Writing, Grades 8 and 11, 1984 to 1992

			HOW OFTEN STUDENTS FIND STATEMENTS TO BE TRUE							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
	Grade	Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Writing helps me think more clearly	8	1992	42(1.6)	276(2.3)	28(1.2)	277(2.9)	18(1.2)	271(3.4)	12(1.1)	262(4.1)
		1984	44(2.0)	268(2.8)	27(2.0)	267(3.6)	17(1.9)	268(4.0)	12(1.7)	264(5.8)
	11	1992	50(1.5)	290(1.4)	28(1.3)	286(3.5)	15(0.9)	287(3.3)	7(0.6)	274(5.0)
		1984	52(2.5)	289(2.8)	26(1.9)	288(3.7)	13(1.1)	287(4.1)	9(1.3)	275(7.3)
Writing helps me tell others what I think	8	1992	52(1.8)	276(2.6)	20(1.0)	274(2.8)	15(1.2)	272(4.0)	12(1.2)	262(4.8)
		1984	52(2.1)	269(3.1)	20(1.3)	267(3.0)	17(1.5)	269(4.8)	11(1.4)	259(5.0)
	11	1992	57(1.2)	290(1.6)	22(1.0)	287(3.1)	13(0.9)	282(4.2)	8(0.6)	278(4.9)
		1984	55(1.8)	289(2.6)	22(1.4)	290(4.0)	14(1.0)	285(3.9)	8(1.3)	272(8.3)
Writing helps me tell others how I feel	8	1992	52(1.8)	276(2.4)	20(1.1)	274(3.9)	16(1.0)	273(2.7)	12(1.2)	261(4.7)
		1984	50(2.0)	270(3.0)	21(2.0)	266(3.4)	14(1.5)	266(3.6)	14(1.4)	259(5.8)
	11	1992	60(1.2)	289(1.6)	19(1.0)	289(3.5)	14(0.9)	282(3.5)	7(0.6)	280(5.0)
		1984	55(2.3)	290(2.8)	22(2.1)	287(3.5)	14(1.5)	288(5.7)	8(1.3)	268(8.6)
Writing helps me understand my own feelings	8	1992	44(1.4)	277(2.6)	21(1.3)	274(2.8)	18(1.2)	273(3.5)	17(1.1)	265(3.4)
		1984	40(2.2)	270(2.6)	23(1.8)	266(3.7)	17(1.7)	268(3.9)	20(1.8)	263(3.9)
	11	1992	49(1.4)	288(1.6)	22(1.2)	290(4.0)	15(1.1)	285(2.6)	13(0.9)	281(3.6)
		1984	47(2.1)	288(2.5)	22(1.8)	288(4.3)	16(1.4)	291(4.4)	15(2.1)	276(6.0)
People who write well have a better chance of getting good jobs	8	1992	51(1.5)	274(2.0)	30(1.1)	274(2.5)	12(1.2)	274(3.6)	7(0.7)	268(5.6)
		1984	47(2.0)	267(2.3)	31(1.7)	268(3.5)	14(1.5)	272(5.6)	8(1.3)	255(6.7)
	11	1992	59(1.3)	289(1.6)	28(1.1)	287(3.2)	8(0.8)	283(4.6)	5(0.6)	271(5.7)
		1984	54(2.1)*	289(2.1)	30(1.9)	284(4.0)	11(1.3)	292(3.9)	4(1.1)	277(8.1)
People who write well are more influential	8	1992	52(1.6)	276(2.5)	28(1.2)	272(2.6)	11(1.1)	272(3.1)	8(0.9)	266(6.2)
		1984	49(1.9)	268(2.8)	28(2.2)	270(2.9)	12(1.1)	264(5.0)	11(1.2)	258(6.1)
	11	1992	60(1.5)	288(1.7)	25(1.4)	287(3.1)	10(1.0)	285(4.4)	5(0.5)	277(5.0)
		1984	54(2.4)*	290(2.8)	24(1.9)	285(4.5)	15(1.7)*	287(4.8)	7(1.1)	275(5.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Students' responses to questions about their attitudes toward writing are summarized in Table 13.3. Items in this set asked students at all three grades to react to statements such as "I like to write" and "I write on my own outside of school."

Table 13.3

Trends in Attitudes Toward Writing, Grades 4, 8, and 11, 1984 to 1992

			HOW OFTEN STUDENTS FIND STATEMENTS TO BE TRUE							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
	Grade	Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
I like to write	4	1992	54(1.4)	206(2.3)	23(1.2)	212(2.8)	11(0.9)	206(5.4)	12(0.7)	200(3.1)
		1984	55(2.3)	204(3.0)	18(1.5)	208(4.6)	10(1.5)	203(5.3)	15(1.6)	199(4.4)
	8	1992	43(1.8)	277(2.6)	26(1.3)	276(1.8)	17(1.2)	271(3.5)	14(1.2)	258(3.7)
		1984	39(2.5)	270(3.0)	33(1.9)*	270(2.9)	17(1.7)	264(3.8)	11(1.5)	256(5.2)
	11	1992	43(1.7)	291(2.3)	29(1.1)	287(1.9)	16(0.9)	282(3.1)	12(0.9)	274(3.2)
		1984	40(2.4)	294(3.7)	32(2.1)	290(4.0)	17(1.5)	287(5.4)	10(1.3)	283(6.8)
I am a good writer	4	1992	63(1.3)	208(2.2)	18(1.2)	211(3.1)	9(0.7)	205(4.8)	9(0.9)	196(4.3)
		1984	59(2.0)	204(2.4)	19(1.7)	208(5.0)	11(1.7)	202(4.9)	9(1.2)	199(6.3)
	8	1992	44(1.5)	278(2.4)	28(1.5)	274(2.1)	16(1.1)	267(3.1)	12(0.9)	261(3.6)
		1984	41(1.8)	271(3.3)	34(1.7)	268(2.1)	13(1.3)	265(5.3)	12(1.3)	255(4.8)
	11	1992	49(1.7)	292(2.1)	27(1.4)	286(2.4)	13(1.2)	280(2.5)	10(0.7)	268(4.7)
		1984	38(1.8)*	298(3.5)	34(2.2)*	291(3.7)	17(2.1)	282(3.5)	10(1.1)	278(5.8)
People like what I write	4	1992	55(1.4)	209(2.4)	22(1.2)	209(4.1)	9(0.7)	205(4.5)	11(0.9)	194(4.7)
		1984	52(2.1)	205(2.1)	20(1.5)	208(3.5)	11(1.6)	205(6.3)	13(1.0)	194(5.1)
	8	1992	44(1.7)	278(2.3)	30(1.6)	275(2.0)	14(1.0)	264(3.7)	10(1.1)	259(3.3)
		1984	38(2.4)*	268(3.3)	36(2.1)	272(2.8)	14(1.6)	262(4.8)	11(1.5)	254(4.7)
	11	1992	46(1.5)	291(2.4)	36(1.8)	286(1.8)	10(0.9)	281(4.4)	8(0.7)	266(3.8)
		1984	35(2.5)*	294(3.5)	38(2.6)	294(3.5)	18(2.1)*	281(3.3)	8(1.5)	276(5.2)
I write on my own outside of school	4	1992	46(1.2)	207(1.8)	12(0.9)	212(4.3)	12(0.9)	215(2.7)	28(1.3)	200(3.1)
		1984	47(2.0)	204(2.6)	12(1.5)	205(5.5)	9(1.1)	206(4.2)	30(1.6)	203(3.1)
	8	1992	37(1.6)	273(2.4)	18(1.1)	277(3.5)	17(0.8)	278(2.5)	28(1.5)	268(2.4)
		1984	36(2.5)	270(2.8)	16(2.0)	270(4.1)	21(1.8)	266(3.5)*	26(2.3)	262(3.7)
	11	1992	33(1.3)	290(2.8)	15(1.1)	284(2.7)	23(1.4)	290(2.2)	28(1.4)	282(2.1)
		1984	31(2.7)	293(3.6)	17(1.9)	285(4.5)	21(2.6)	291(4.4)	30(1.6)	290(4.4)
I don't like to write things that will be graded	4	1992	32(1.2)	201(3.7)	12(0.9)	209(3.5)	15(1.0)	210(3.7)	40(1.1)	210(2.3)
		1984	37(2.0)*	201(3.1)	14(1.7)	207(6.6)	12(1.3)	206(4.8)	35(2.0)	205(3.4)
	8	1992	37(1.8)	268(1.8)	19(1.1)	275(3.1)	19(1.4)	278(2.6)	26(1.4)	275(3.1)
		1984	31(2.2)	268(2.8)	23(2.0)	272(3.0)	19(2.2)	270(3.5)	25(2.6)	260(4.2)*
	11	1992	30(1.2)	284(2.6)	24(1.0)	290(3.0)	24(0.8)	288(2.9)	21(1.0)	283(2.3)
		1984	26(1.9)	292(3.6)	26(2.1)	292(4.1)	24(2.0)	290(4.0)	23(2.1)	287(3.1)
If I didn't have to write for school, I wouldn't write anything	4	1992	28(1.2)	198(2.1)	12(0.9)	210(4.2)	13(0.7)	211(3.2)	46(1.1)	210(2.9)
		1984	33(1.7)*	198(3.1)	10(1.3)	204(6.3)	11(1.3)	211(5.6)	44(2.1)	206(2.1)
	8	1992	18(1.1)	263(3.3)	17(0.9)	269(2.9)	20(1.3)	277(2.8)	45(1.7)	277(2.7)
		1984	17(2.2)	262(4.3)	20(2.6)	268(3.3)	20(1.8)	270(4.0)	42(2.4)	268(2.8)*
	11	1992	17(1.2)	279(3.5)	17(1.1)	283(3.5)	21(1.2)	286(1.9)	45(1.4)	290(1.7)
		1984	15(1.4)	290(5.4)	15(1.6)	285(5.9)	24(2.2)	296(3.9)	46(2.4)	289(3.1)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

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In 1992, compared with 1984, significantly fewer fourth graders reported agreeing with the statements: "I don't like to write things that will be graded" and "If I didn't have to write for school I wouldn't write anything" more than half the time. At the eighth grade significantly fewer eighth graders said that "I like to write" about half the time, and more said that "people like what I write" more than half the time. At the eleventh grade, significantly more students said that "I am a good writer" more than half the time and fewer found this statement to be true about half the time. Also, significantly more eleventh graders said that "people like what I write" more than half the time and fewer said this statement was true less than half the time. Based on these results, it appears that the attitudes of students towards writing are becoming more positive. More students see themselves as good writers and see writing as a valuable activity. However, it should be kept in mind that at grades 8 and 11, in 1992 and 1984, less than half the students indicated positive attitudes towards writing. Also, lower-achieving students seem to have less positive attitudes towards writing. In fourth grade, slightly more than half of the students felt positively towards writing.

In comparing the writing proficiency of students who seem to have positive attitudes about writing (they found the statements to be true at least half the time) and those who do not (they found the statements to be true less than half the time), significant differences in performance were found at each grade level for almost every statement.

In 1992, at grade 4, students who said they liked to write and that they are good writers about half the time outperformed those who never or hardly ever found these statement to be true. Fourth graders who said that people like what they write more than half the time performed significantly higher than those who never or hardly ever found this statement to be true. Also, 4th graders who said they write on their own outside of school less than half the time outperformed those who never or hardly ever do so and those who more than half the time said they wouldn't write if they did not have to for school performed significantly lower than those who agreed with this statement less than half the time.

At grades 8 and 12, students who more than half the time felt that they like to write, that they are good writers, and that people like what they write also outperform students who never or hardly ever find these statements to be true. Eighth graders who less than half the time agreed that they write on their own outside of school outperformed those who never or hardly ever did so. Also at grade 8, students who said that they did not like to write things that would be graded less than half the time performed higher than those who more than half the time found this statement to be true. Lastly, at both grades 8 and 12 students who more than half the time said that they would not write anything if they did not have to for school performed significantly lower than those who never or hardly ever agreed with this statement.

Thus, for the most part, students who had positive attitudes about writing and about themselves as writers performed better on the NAEP writing assessment than did students who had less positive views of writing.

Another set of questions asked students about the uses of writing in their own lives, including such personal uses as writing letters to friends or relatives, and functional uses, like writing notes and messages. Students' responses to these questions are presented in Tables 13.4 and 13.5. Table 13.4 includes responses from students at all three grade levels. Students in grades 8 and 11 were asked more detailed questions about their personal and social uses of writing. These data are presented in Table 13.5.

At grade 4, there was little change from 1984 to 1992 in students' reported uses of writing. At grade 8, there was a significant increase in the number of students who reported writing letters to friends at least once a week and a decrease in the percentage reporting once or twice a month. There also was a significant increase in the percentage of eighth and eleventh graders who reported writing stories or poems at least once a week and once or twice a month, as well as a decrease in those who wrote them never or hardly ever. The percentage of eleventh graders who reported never or hardly ever writing notes or messages decreased as well.

As shown in Table 13.5, eighth graders reported no significant increases in the frequency with which they engaged in personal and social types of writing. At grade 11, there was a significant decrease in the percentage of students who reported doing crossword puzzles at least once a week, accompanied by an increase in those saying they never or hardly ever did crossword puzzles.

The students' responses to the two sets of questions revealed the range of personal and social types of writing in which they engaged. As one might expect, students more frequently wrote notes and messages and made lists of things to buy or do. It is encouraging that one-third of the fourth graders and 45 to 38 percent of the eighth and eleventh graders reported writing letters at least once a week. Twenty-eight percent of the fourth graders, 17 percent of the eighth graders, and 16 percent of the eleventh graders were writing stories and poems on their own. Also, 29 percent of the eighth graders and 22 percent of the eleventh graders were keeping weekly journals, and 41 percent of the eighth graders reported doing a crossword puzzle at least weekly.

Table 13.4

Trends in Personal and Social Uses of Writing, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEY ENGAGED IN VARIOUS KINDS OF WRITING ACTIVITIES					
			At Least Once a Week		Once or Twice a Month		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Write letters to friends or relatives	Grade 4	1992	32(1.4)	205(1.9)	35(1.1)	214(2.6)	29(1.4)	204(2.6)
		1984	32(2.1)	200(3.1)	36(2.1)	211(3.1)	30(1.6)	199(3.5)
	Grade 8	1992	45(1.7)	277(2.0)	30(1.5)	280(2.3)	23(1.4)	269(2.2)
		1984	37(1.9)*	270(2.4)*	37(2.1)*	269(3.2)*	25(1.5)	261(3.4)
	Grade 11	1992	38(1.4)	289(2.6)	34(1.4)	291(1.8)	27(1.2)	281(2.4)
		1984	36(1.8)	294(2.7)	37(2.0)	292(2.8)	26(2.1)	287(2.7)
Write notes and messages	Grade 4	1992	43(1.5)	212(1.7)	18(1.2)	208(2.9)	34(1.2)	204(2.0)
		1984	42(2.3)	205(3.4)	20(2.2)	202(4.2)	33(2.0)	203(3.1)
	Grade 8	1992	71(1.7)	280(1.7)	12(1.0)	270(3.4)	15(1.0)	261(3.3)
		1984	66(2.1)	271(2.5)*	12(1.4)	263(4.9)	19(1.8)	256(4.4)
	Grade 11	1992	78(1.1)	290(1.7)	10(0.8)	283(2.9)	11(0.9)	272(3.7)
		1984	73(1.9)	295(2.0)	11(1.2)	284(3.8)	15(1.4)*	284(4.0)
Write stories or poems that are not schoolwork	Grade 4	1992	28(1.3)	205(3.0)	22(1.3)	212(2.1)	47(1.9)	208(2.1)
		1984	25(1.7)	196(4.5)	22(1.7)	208(5.1)	50(2.7)	206(2.6)
	Grade 8	1992	17(1.1)	273(3.6)	23(1.5)	282(3.3)	59(1.4)	274(1.8)
		1984	10(1.0)*	266(5.7)	18(1.2)*	271(3.8)	71(1.6)*	266(2.6)*
	Grade 11	1992	16(1.3)	286(3.8)	23(1.3)	290(2.1)	60(1.7)	287(1.4)
		1984	11(1.1)*	290(3.8)	18(1.8)*	292(3.6)	70(1.5)*	292(2.0)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

In comparing the writing proficiency of students who engaged in various types of personal and social writing activities infrequently (never or hardly ever) and more frequently (at least once a week or once or twice a month) some significant differences were found. In 1992, at all three grade levels, students who wrote letters to friends or relatives once or twice a month outperformed students who did so never or hardly ever. Likewise, students who wrote notes and messages at least once a week performed significantly higher than those who never or hardly ever performed this type of writing activity at all three grades.

Students in grade 8 who made lists of things to buy or do, who copied recipes or directions, and those who kept a diary or journal once or twice a month outperformed those who reported never or hardly ever engaging in these writing activities. Likewise, eleventh graders who made lists and kept a diary or journal at least once a week and those who copied recipes or directions once or twice a month performed significantly higher than those who never or hardly ever engaged in these writing activities.

In general, frequency of use of a variety of writing activities for personal or social purposes seems associated with higher performance on the writing assessment.

Table 13.5

Trends in Personal and Social Uses of Writing, Grades 8 and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEY ENGAGED IN VARIOUS KINDS OF WRITING ACTIVITIES					
			At Least Once a Week		Once or Twice a Month		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Make lists of things to buy or do	Grade 8	1992	45(1.9)	278(2.2)	24(1.4)	275(3.1)	31(1.5)	266(2.2)
		1984	44(2.4)	267(2.5)*	21(1.9)	273(3.7)	35(2.0)	263(3.6)
	Grade 11	1992	48(1.7)	292(1.8)	24(1.4)	287(3.4)	28(1.2)	279(2.4)
		1984	45(2.3)	290(2.3)	23(2.1)	290(3.1)	30(2.6)	281(3.8)
Copy recipes or directions	Grade 8	1992	24(1.2)	274(2.8)	29(1.4)	279(2.6)	46(1.6)	270(2.1)
		1984	22(1.9)	266(3.5)	28(1.6)	270(2.8)	49(2.6)	266(2.9)
	Grade 11	1992	16(1.2)	287(3.1)	31(1.3)	293(2.7)	53(1.6)	283(2.0)
		1984	20(1.8)	286(3.8)	33(1.9)	292(3.5)	46(2.3)	284(3.4)
Keep a diary or journal	Grade 8	1992	29(1.5)	278(2.3)	14(1.0)	282(3.5)	55(1.8)	269(2.2)
		1984	26(1.8)	270(3.0)	12(1.0)	270(3.7)	62(2.2)	265(2.8)
	Grade 11	1992	22(1.1)	295(2.0)	13(0.7)	293(4.8)	64(1.4)	283(2.1)
		1984	19(1.4)	291(4.3)	13(1.3)	287(3.9)	67(1.4)	286(2.4)
Do a crossword puzzle	Grade 8	1992	40(1.7)	273(2.8)	34(1.6)	277(2.3)	25(1.2)	270(2.6)
		1984	38(2.6)	264(3.5)*	35(2.1)	271(2.1)	26(2.3)	268(3.7)
	Grade 11	1992	22(1.5)	286(3.2)	37(1.5)	289(3.0)	41(1.7)	286(2.0)
		1984	29(1.9)*	289(3.5)	35(1.8)	288(3.3)	34(2.2)*	285(4.2)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

The last set of questions has to do with the kinds of writing activities in which students' family members engage. These responses are presented in Tables 13.6 and 13.7.

Between 1984 and 1992, fewer fourth graders reported seeing family members copying recipes or directions at least once a week. Significantly more reported seeing family members keeping diaries or journals at least once a week and never or hardly ever. There also was a decrease in the percentage of fourth graders who reported never or hardly ever seeing family members work a crossword puzzle and an increase in those who reported never or hardly ever seeing family members make lists of things to buy or do.

At the eighth grade, more students reported seeing family members writing notes or messages at least once a week and fewer never or hardly ever. Also, more eighth graders reported seeing family members writing stories or poems once or twice a month and fewer never or hardly ever. At the eleventh grade, fewer students reported seeing family members writing letters to friends or relatives and copying recipes or directions at least once a week. More eleventh graders reported never or hardly ever seeing family members copying recipes or directions. Also, more eleventh graders said their family members wrote stories or poems once or twice a month.

As a portrait of the students' home writing environment, Tables 13.6 and 13.7 show a wide range of activities occurring at least once a week. In 1992, approximately one-third of the students at all three grades reporting seeing family members write both personal and business letters at least once a week. Forty-four percent of the fourth graders, 67 percent of the eighth graders, and 73 percent of the eleventh graders reported seeing family members write notes or messages on a weekly basis. Likewise, a high percentage at each grade (58 to 68 percent) reported seeing family members making lists on a weekly basis. More than one-quarter of the students at each grade saw family members copying recipes or directions at least once a week. It is especially interesting to note that one-third of the fourth graders, and approximately one-fifth of the eighth and eleventh graders reported having family members who kept diaries or journals at least once a week. Also, 18, 10, and 8 percent, respectively, reported seeing family members write poems or stories at least weekly.

In comparing the writing proficiency of students who reported that their family members engaged in various types of personal and social writing activities infrequently (never or hardly ever) and more frequently (at least once a week or once or twice a month) a few significant differences were found. In 1992, at grade 4, students who reported that their family members copied recipes or directions once or twice a month outperformed those who reported their family members did so at least once a week.

Table 13.6

Trends in Family Uses of Writing, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEIR FAMILIES ENGAGED IN VARIOUS KINDS OF WRITING ACTIVITIES							
			At Least Once a Week		Once or Twice a Month		Never or Hardly Ever		I Don't Know	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Write notes or messages	Grade 4	1992	44(1.3)	209(1.9)	16(1.0)	211(3.3)	24(1.2)	207(2.2)	14(1.2)	202(3.2)
		1984	41(2.3)	205(3.7)	18(2.1)	205(5.3)	25(1.9)	203(3.9)	14(1.5)	201(4.1)
	Grade 8	1992	67(1.7)	281(1.6)	12(1.0)	272(4.2)	14(1.1)	264(4.3)	6(0.7)	253(4.8)
		1984	58(2.1)*	273(2.2)*	13(1.3)	266(4.6)	21(1.7)*	256(4.3)	7(0.9)	252(7.1)
	Grade 11	1992	73(1.2)	291(1.5)	9(0.7)	282(4.5)	12(0.8)	274(3.4)	5(0.6)	277(5.8)
		1984	72(1.9)	296(2.0)	8(1.1)	284(5.4)	13(1.5)	280(3.4)	5(1.0)	284(8.1)
Make lists of things to buy or do	Grade 4	1992	58(1.5)	208(2.0)	9(0.9)	211(4.7)	20(1.1)	205(3.2)	13(0.7)	198(4.2)
		1984	57(2.1)	205(2.4)	12(1.4)	205(6.3)	13(1.4)*	206(4.6)	16(1.7)	197(5.1)
	Grade 8	1992	64(1.5)	276(1.9)	11(1.3)	272(4.4)	20(1.3)	268(3.4)	5(0.7)	257(6.6)
		1984	63(1.9)	271(2.1)	10(1.8)	265(5.6)	20(1.9)	262(3.9)	6(1.5)	250(6.9)
	Grade 11	1992	68(1.2)	290(1.7)	12(1.0)	283(3.1)	16(1.0)	277(3.2)	4(0.6)	278(5.0)
		1984	70(2.2)	293(2.5)	13(1.8)	284(5.5)	13(1.7)	284(4.6)	3(0.8)	282(8.2)
Copy recipes or directions	Grade 4	1992	28(1.2)	203(2.3)	20(1.0)	213(2.7)	31(1.2)	208(3.0)	19(1.0)	203(3.1)
		1984	36(1.9)*	204(3.1)	20(1.6)	208(3.7)	26(2.2)	205(3.1)	18(1.4)	197(5.3)
	Grade 8	1992	28(1.5)	275(3.6)	28(1.2)	280(2.7)	34(1.5)	269(1.8)	9(0.9)	263(4.4)
		1984	29(1.9)	267(2.9)	31(2.3)	274(3.1)	32(1.9)	263(3.8)	8(1.4)	258(9.9)
	Grade 11	1992	26(1.2)	290(2.6)	33(1.4)	291(2.3)	33(1.1)	282(2.5)	8(0.9)	274(3.7)
		1984	33(2.1)*	289(3.7)	33(2.3)	296(2.8)	26(2.1)*	286(4.9)	7(1.2)	283(4.9)
Work crossword puzzles	Grade 4	1992	55(1.2)	205(2.0)	16(1.0)	209(4.1)	20(1.1)	209(3.7)	9(0.7)	207(4.1)
		1984	51(2.5)	202(2.1)	14(1.7)	206(5.2)	27(1.9)*	207(3.3)	7(1.0)	201(6.2)
	Grade 8	1992	39(1.8)	271(2.5)	24(1.1)	279(2.3)	31(1.0)	273(3.1)	5(0.8)	264(7.3)
		1984	40(2.0)	265(2.7)	23(2.2)	269(2.8)*	30(2.4)	270(3.3)	6(1.3)	259(11.3)
	Grade 11	1992	31(1.4)	287(2.0)	25(1.3)	287(2.9)	36(1.4)	287(2.0)	8(0.8)	279(3.3)
		1984	36(2.2)	291(3.4)	24(2.1)	292(4.0)	33(2.5)	290(4.3)	6(1.2)	284(8.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Eighth graders whose family members wrote notes or messages at least once a week performed significantly higher than those who did so never or hardly ever. Also, eighth graders who reported that their family members copied recipes or directions, wrote letters to relatives or friends, and wrote business letters once or twice a month outperformed those who reported their family members never or hardly ever engaged in these writing activities.

At grade 11, students who reported that their family members wrote notes or messages, made lists, copied recipes or directions, and kept diaries or journals at least once a week performed significantly higher than students who reported that their family members never or hardly ever engaged in these writing activities. Also, eleventh graders who said that their family members wrote business letters once or twice a month outperformed those who said their family members never or hardly ever did so.

Thus, at grades 8 and 11 students' views of how often their family members engaged in a variety of writing activities appear to be associated with their writing proficiency. For 50 percent of the family writing activities at grade 8 and 63 percent at grade 11, higher achieving students reported that their family members frequently or occasionally engaged in these activities.

Table 13.7

Trends in Family Uses of Writing, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEIR FAMILIES ENGAGED IN VARIOUS KINDS OF WRITING ACTIVITIES							
			At Least Once a Week		Once or Twice a Month		Never or Hardly Ever		I Don't Know	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Write letters to relatives or friends	Grade 4	1992	29(1.3)	206(2.5)	31(1.4)	214(2.2)	24(1.1)	205(3.0)	14(1.2)	201(2.5)
		1984	34(2.3)	202(3.3)	30(2.3)	210(3.5)	23(2.6)	201(4.8)	12(1.5)	202(4.7)
	Grade 8	1992	33(1.3)	278(2.2)	36(1.4)	280(2.3)	23(1.2)	271(2.4)	8(0.9)	262(4.8)
		1984	34(2.1)	271(2.5)	38(2.4)	268(3.2)*	20(2.1)	263(4.2)	7(1.0)	250(6.3)
	Grade 11	1992	28(1.3)	291(2.5)	41(1.6)	289(2.1)	24(1.4)	284(2.6)	6(0.7)	279(4.5)
		1984	36(2.4)*	295(3.0)	38(1.9)	293(2.8)	20(1.6)	287(2.9)	5(1.1)	285(6.3)
Write business letters	Grade 4	1992	34(1.3)	209(2.1)	14(0.9)	209(3.4)	26(1.2)	206(2.2)	23(1.4)	208(1.7)
		1984	32(2.2)	206(3.8)	16(1.6)	204(4.4)	28(2.1)	204(4.3)	22(1.9)	202(4.3)
	Grade 8	1992	36(1.7)	280(2.9)	21(1.1)	282(2.8)	27(1.0)	270(2.7)	16(0.9)	266(3.7)
		1984	35(1.3)	271(3.0)	22(1.6)	271(3.2)*	31(2.0)	263(3.4)	12(1.1)	256(5.8)
	Grade 11	1992	41(1.2)	290(2.2)	22(1.4)	292(2.3)	25(1.4)	281(2.8)	11(0.8)	282(3.0)
		1984	37(2.1)	296(3.0)	26(1.5)	291(3.1)	26(2.2)	290(3.5)	9(1.1)	287(5.4)
Write stories or poems	Grade 4	1992	18(1.1)	204(3.0)	14(1.0)	209(2.7)	47(1.5)	210(1.8)	18(1.0)	204(2.7)
		1984	17(1.5)	194(5.1)	16(1.9)	210(4.3)	44(2.1)	208(2.6)	20(1.7)	200(3.2)
	Grade 8	1992	10(0.8)	273(5.6)	19(1.4)	282(3.7)	56(1.2)	277(1.7)	15(1.3)	266(3.5)
		1984	8(1.1)	268(4.8)	13(1.2)*	270(3.5)	65(2.3)*	268(3.0)*	12(1.7)	258(5.1)
	Grade 11	1992	8(0.8)	280(5.8)	18(1.4)	291(3.1)	61(1.4)	288(1.5)	12(0.8)	284(3.5)
		1984	8(1.5)	292(6.0)	13(1.3)*	297(4.8)	63(2.4)	292(2.1)	14(1.8)	289(4.1)
Keep diaries or journals	Grade 4	1992	33(1.0)	207(2.9)	9(0.8)	211(5.4)	32(1.1)	208(2.2)	25(1.3)	203(3.0)
		1984	26(1.8)*	202(2.5)	10(1.1)	196(5.0)	28(1.4)*	211(3.8)	35(1.9)*	201(3.1)
	Grade 8	1992	21(1.4)	278(3.0)	8(0.7)	276(5.7)	49(1.6)	273(2.4)	22(1.3)	268(3.4)
		1984	22(1.7)	269(3.7)	5(1.1)	273(7.4)	50(1.8)	268(2.5)	23(1.8)	261(4.4)
	Grade 11	1992	19(1.3)	295(2.6)	8(0.6)	294(3.7)	50(1.4)	285(1.8)	23(1.2)	280(2.3)
		1984	17(2.4)	291(4.7)	6(1.4)	296(8.9)	55(3.2)	290(2.8)	20(2.2)	288(3.4)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Managing the Writing Process

In addition to building positive attitudes toward writing, teachers have sought to help students develop effective strategies for managing writing processes, including strategies for planning and revising what they write. Previous studies and earlier national assessments of writing have shown that students who make use of a variety of strategies are more likely to be effective writers.[87]

One writing task given as part of both assessments provided an opportunity to observe explicit planning strategies.[88] The Recreation Opportunities task was formatted so that the remainder of the page on which the writing prompt was printed was left blank and the students were told that this space was available to make notes on before writing. The subsequent pages were used for students' actual responses. In addition to rating the quality of the responses, raters noted whether the students had used the space provided to make notes.

Table 13.8 summarizes the evidence of overt planning for the eighth and eleventh graders who were given this writing task. In both grades, the overall proportion of students engaging in overt planning was small and did not change across time. However, the eighth- and eleventh-grade students who did make use of the planning space on the Recreation Opportunities task performed significantly higher on this task than did those who left the space blank.

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[87] Applebee, A. N., Langer, J. A., Jenkins, L. B., Mullis, I. V.S., & Foertsch, M. A., *Learning to Write in Our Nation's Schools: Instruction and Achievement in 1988 at Grades 4, 8, and 12* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1990).

Bereiter, C. & Scardamalia, M., *The Psychology of Written Composition* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1987).

[88] In the 1992 NAEP Writing Assessment, all tasks included space for planning responses. For an analysis of the strategies students used, see Applebee, A. N., Langer, J. A., Mullis, I. V.S., Latham, A. S., & Gentile, C A., *NAEP 1992 Writing Report Card* (Washington, DC: National Center for Education Statistics, U.S Government Printing Office, 1994).

Table 13.8

Trends in Overt Planning on "Recreation Opportunities" Task, Grades 8 and 11, 1984 to 1992

	GRADE 8				GRADE 11			
	Used Planning Space		Did Not Use Planning Space		Used Planning Space		Did Not Use Planning Space	
Year	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
1992	17(1.2)	291(2.4)	83(1.2)	270(2.0)	18(1.1)	295(2.4)	82(1.1)	285(1.8)
1984	16(2.4)	282(3.9)	84(2.4)	267(2.2)	18(2.0)	299(5.4)	82(2.0)	289(2.2)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

A variety of questions asked students about the revising and editing strategies they used, including their attention to writing conventions (spelling, punctuation, and grammar) as well as to the structure and organization of the text as a whole. Their responses are summarized in Tables 13.9 and 13.10.

At the fourth grade, in 1992, significantly more students reported taking out parts thyey didn't like more than half the time and fewer students reported taking out parts they did not like never or hardly ever. Also, fewer fourth graders threw out what they had written and started over again more than half the time and more reported doing so never or hardly ever. Fewer fourth graders reported never or hardly ever correcting their grammar.

Between 1984 and 1992, more eighth graders reported adding ideas or information and moving sentences or paragraphs more than half the time. Fewer eighth graders reported starting over again more than half the time and more reported doing so less than half the time.

At the eleventh grade, more students reported taking out parts they did not like, and fewer reported rewriting most of their papers or starting over more than half the time.

In comparing the writing proficiency of students who reported that they used various revising and editing strategies, a few significant differences were found. In 1992, at fourth grade only one strategy seemed to be associated with differences in writing achievement. Fourth graders who threw out their papers and started over again more than half the time performed significantly lower than students who did so less frequently (less than half the time and never or hardly ever).

More than for fourth graders, eighth graders' performance on the assessment seems associated with their use of editing and revising strategies. At grade 8 students who reported that they corrected their grammar mistakes, changed words, and moved sentences or paragraphs more than half the time performed significantly higher than did those who performed these editing strategies never or hardly ever. Also, eighth graders who more than half the time threw out their papers to start over again performed significantly lower than did those who used this strategy less than half the time.

At grade 11, seven of the nine revising and editing strategies appear to be associated with students' writing performance. Eleventh graders who corrected their grammar mistakes, changed words, added ideas, took out parts they did not like, and moved sentences or paragraphs more than half the time outperformed those who did so never or hardly ever.

Table 13.9

Trends in the Use of Specific Revising and Editing Strategies, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEY USE STRATEGIES							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Correct spelling	Grade 4	1992	75(1.0)	208(2.0)	10(0.8)	205(5.5)	6(0.5)	205(4.8)	7(0.6)	199(4.4)
		1984	74(1.8)	206(2.1)	10(1.2)	202(7.0)	6(1.1)	200(9.7)	9(0.9)	194(7.0)
	Grade 8	1992	74(1.3)	275(2.0)	12(0.8)	266(3.2)	8(0.7)	272(6.1)	6(0.7)	264(6.3)
		1984	74(1.8)	267(2.2)*	12(1.3)	273(5.3)	6(1.1)	266(6.5)	7(1.1)	263(7.6)
	Grade 11	1992	78(1.3)	289(1.8)	10(1.0)	279(3.2)	7(0.6)	278(5.2)	4(0.6)	275(5.0)
		1984	76(2.4)	294(2.4)	9(1.3)	284(6.2)	9(1.5)	279(5.0)	5(1.4)	276(9.3)
Correct punctuation	Grade 4	1992	63(1.2)	209(2.1)	11(0.9)	206(4.5)	10(0.9)	204(5.1)	15(0.8)	201(2.9)
		1984	63(2.5)	206(2.7)	12(1.6)	206(5.9)	10(1.3)	200(3.4)	14(2.1)	196(4.8)
	Grade 8	1992	68(1.5)	277(2.3)	14(1.1)	269(3.9)	12(0.8)	264(2.9)	6(0.9)	261(8.1)
		1984	68(2.0)	268(2.1)*	12(1.3)	270(5.7)	10(1.4)	266(4.8)	9(1.6)	261(6.8)
	Grade 11	1992	70(1.3)	289(1.9)	14(1.1)	280(3.0)	10(0.7)	281(4.0)	6(0.7)	281(5.6)
		1984	69(2.6)	294(2.4)	12(1.3)	281(6.5)	10(1.8)	283(4.4)	7(1.4)	281(7.4)
Correct grammar	Grade 4	1992	53(1.4)	210(2.0)	13(0.7)	208(4.3)	9(0.7)	205(4.5)	22(1.2)	201(2.7)
		1984	49(2.2)	205(2.6)	11(1.2)	209(6.5)	8(0.9)	202(6.9)	28(2.0)*	201(3.9)
	Grade 8	1992	68(1.3)	276(2.1)	14(1.3)	269(4.2)	10(0.9)	267(4.2)	7(0.7)	258(6.3)
		1984	64(2.2)	268(2.4)*	17(1.8)	268(3.7)	10(1.5)	268(4.9)	8(1.4)	254(9.0)
	Grade 11	1992	72(1.1)	290(1.9)	15(1.1)	278(2.4)	8(0.5)	280(4.7)	5(0.6)	271(5.7)
		1984	70(2.2)	294(2.5)	12(1.3)	286(5.0)	11(1.7)	278(6.2)	6(1.0)	277(8.5)
Change words	Grade 4	1992	65(1.3)	207(2.0)	14(0.9)	209(3.4)	9(0.7)	208(5.4)	11(0.8)	200(4.3)
		1984	61(2.1)	206(2.4)	15(1.4)	206(5.2)	9(1.2)	198(4.7)	14(1.2)	196(5.7)
	Grade 8	1992	71(1.6)	275(2.0)	15(1.0)	272(3.3)	9(0.7)	269(3.2)	6(0.9)	257(7.3)
		1984	64(2.4)	271(2.7)	16(1.3)	266(3.8)	10(1.6)	254(5.6)	9(1.3)	258(7.6)
	Grade 11	1992	75(1.7)	290(1.6)	15(1.3)	281(2.7)	6(0.8)	275(5.5)	4(0.5)	262(5.0)
		1984	71(2.4)	295(2.5)	16(2.0)	283(5.0)	8(1.2)	277(6.4)	4(1.1)	271(11.7)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

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Students at grade 11 who threw out their papers more than half the time performed significantly lower than students who did so less than half the time. Also, eleventh graders who rewrite most of their papers less than half the time outperformed those who use this strategy both more frequently (half or more than half the time) and less frequently (never or hardly ever). Thus, occasional use of the last two revision strategies — rewriting most of one's paper and throwing a draft out to start over again — is associated with higher performance. Infrequent or frequent use appears related to lower performance.

Overall, the use of a variety of revision and editing strategies appears to be associated with higher performance at grades 8 and 11, and less so at fourth grade. This, in part, can be attributed to the developmental stage of writers in the fourth grade. At this age, students are usually just beginning to master the logistics of writing so that extensive use of revising and editing strategies cannot be expected yet, unless the student is drafting and revising using a word processor.

Table 13.10

Trends in the Use of Specific Revising and Editing Strategies, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN THEY USE STRATEGIES							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Add ideas or information	Grade 4	1992	63(1.3)	207(1.9)	16(1.0)	209(4.4)	9(0.8)	206(6.7)	10(1.1)	199(4.6)
		1984	60(2.0)	204(2.5)	17(1.5)	209(4.8)	10(1.5)	203(7.1)	12(1.3)	194(5.9)
	Grade 8	1992	67(1.2)	277(1.7)	19(1.2)	269(2.6)	8(0.6)	267(4.1)	5(0.8)	248(8.4)
		1984	59(2.8)*	270(2.6)	22(1.9)	269(3.3)	12(1.9)	258(5.0)	6(1.3)	252(8.1)
	Grade 11	1992	72(1.4)	289(1.7)	17(1.0)	283(2.4)	6(0.8)	276(6.1)	4(0.7)	267(6.1)
		1984	69(2.0)	293(2.6)	19(1.3)	289(4.5)	8(1.4)	276(5.6)	4(0.9)	273(15.9)
Take out parts you don't like	Grade 4	1992	51(1.1)	207(2.7)	14(0.9)	212(4.3)	12(0.9)	211(3.7)	23(1.2)	200(2.0)
		1984	44(2.0)*	205(3.1)	13(1.3)	204(5.5)	10(1.2)	206(4.8)	31(2.1)*	202(3.3)
	Grade 8	1992	60(1.5)	278(2.3)	19(1.2)	270(3.7)	11(0.9)	268(3.2)	9(0.9)	254(7.0)
		1984	56(2.2)	271(2.7)	19(1.8)	267(3.3)	13(1.8)	263(4.2)	11(1.5)	254(6.0)
	Grade 11	1992	66(1.5)	290(1.7)	17(1.1)	284(2.8)	10(0.9)	280(3.8)	6(0.7)	261(4.9)
		1984	58(3.0)*	295(2.5)	23(2.5)	285(5.2)	11(1.4)	285(5.7)	7(1.2)	278(7.0)
Move sentences or paragraphs	Grade 4	1992	39(1.2)	203(2.8)	16(1.1)	214(3.4)	16(1.2)	214(3.5)	28(1.3)	204(2.5)
		1984	44(1.9)	202(3.4)	16(1.3)	205(4.9)	12(1.5)	207(5.5)	27(1.8)	206(3.5)
	Grade 8	1992	37(1.3)	278(2.3)	25(1.3)	275(2.5)	19(0.9)	273(2.8)	19(1.3)	260(4.7)
		1984	30(2.0)*	272(3.0)	28(2.2)	268(3.5)	19(1.8)	268(3.4)	23(2.4)	258(3.6)
	Grade 11	1992	46(1.8)	291(2.2)	24(1.2)	287(2.3)	19(1.2)	282(3.1)	11(1.1)	274(3.6)
		1984	46(2.6)	295(3.2)	23(1.9)	292(3.5)	17(2.0)	287(5.7)	13(1.8)	276(4.6)
Rewrite most of the paper	Grade 4	1992	35(1.3)	204(2.0)	12(0.7)	203(4.1)	14(1.1)	212(5.3)	37(1.2)	208(2.5)
		1984	36(1.6)	201(2.7)	12(1.3)	207(5.2)	14(1.3)	202(4.2)	36(1.9)	207(3.1)
	Grade 8	1992	42(1.5)	274(2.3)	15(0.9)	274(4.1)	20(1.2)	276(3.9)	22(1.4)	267(3.2)
		1984	39(1.7)	268(2.7)	15(1.8)	268(3.8)	22(1.7)	271(3.3)	23(2.0)	262(4.6)
	Grade 11	1992	35(1.4)	283(2.3)	19(1.2)	284(3.0)	24(1.1)	295(2.4)	21(1.2)	284(3.1)
		1984	43(2.5)*	292(2.0)*	18(1.4)	290(5.7)	21(2.3)	295(5.6)	17(1.6)	282(4.8)
Throw out and start over	Grade 4	1992	27(1.1)	197(2.3)	9(0.8)	209(4.1)	16(1.0)	215(4.0)	47(1.6)	209(2.5)
		1984	33(2.2)*	198(3.4)	12(1.3)	206(4.6)	14(1.1)	205(5.2)	39(2.2)*	208(2.6)
	Grade 8	1992	26(1.6)	265(2.7)	14(1.1)	272(4.9)	26(1.2)	280(2.8)	33(2.1)	275(3.2)
		1984	33(2.0)*	266(3.6)	17(1.9)	266(2.9)	19(1.5)*	271(3.8)	31(2.5)	267(4.3)
	Grade 11	1992	19(1.0)	275(2.4)	15(1.0)	282(3.5)	29(1.2)	290(2.2)	37(1.4)	291(2.7)
		1984	25(1.8)*	286(3.4)*	14(1.9)	285(5.6)	29(2.0)	294(4.1)	32(2.0)	293(4.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

The Instructional Context

To better understand the state of writing achievement in school-age children, NAEP looked at the various factors that influence students in school. Research on effective instructional practices in writing emphasizes that students should write frequently and for a wide range of purposes.[89] Also, researchers have found that an emphasis on mechanics and correctness in writing has little or no effect on the improvement of writing.[90] Instead, they call for teachers to respond to students' writing in ways that communicate high expectations for all students, that emphasize the students' authority over their texts, and that support students throughout the writing process.[91]

As a way of measuring trends in the writing students do in class and the ways in which teachers respond to this writing, several questions in the 1984 and 1992 assessments focused on the kinds and amount of writing that students did in school and on the kinds of responses that students received from their teachers. Trends in responses to these questions provide a glimpse of the instruction students received.

Tables 13.11 and 13.12 summarize students' responses to a question about the kinds of writing they had done for English class the previous week. In 1992, at grade 4, there was a significant increase in the percentage of students who reported writing one or two essays and stories and a decrease in the percentage who did not write essays and stories for English class last week. At grade 8, there was a significant increase between 1984 and 1992 in the percentage of students who said they wrote one or two essays, letters, stories, and poems and a decrease in the percentage who reported they did not write these types of papers in the last week. At the eleventh grade, more students reported writing one or two reports, letters, and poems in the last week and fewer reported that they had not written poems. Overall, the percentage of students at each grade level engaging in a range of writing activities seems to be increasing.

In comparing the writing proficiency of students who reported on how frequently they engaged in various writing activities in English class during the week prior to the assessment, an interesting pattern appears. In 1992, at all three grades, students who reported that they engaged in an activity three or more times a week performed significantly lower than those who said that they had not engaged in these activities in the previous week.

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[89] Graves D. H., *Writing: Teachers and Children at Work* (Portsmouth, NH: Heinemann Educational Books, 1983).

[90] Hillocks, G., Jr., *Research on Written Composition: New Directions for Teaching* (Urbana, IL: ERIC Clearinghouse on Reading and Communication Skills, 1986).

[91] Freedman, S. W., *Response to Student Writing* (Urbana, IL: National Council of Teachers of English, 1987).

Table 13.11

Trends in Types of Writing for English Class, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW MANY OF VARIOUS TYPES OF PAPERS THEY WROTE FOR ENGLISH CLASS LAST WEEK					
			Three or More		One or Two		None	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Essay, composition or theme	Grade 4	1992	3(0.3)	199(4.5)	22(1.0)	204(2.5)	75(1.0)	209(1.4)
		1984	3(0.7)	193(8.2)	16(1.5)*	206(4.1)	81(1.7)*	206(1.9)
	Grade 8	1992	5(0.5)	273(4.3)	44(1.5)	277(1.7)	52(1.5)	273(1.6)
		1984	4(0.5)	271(3.0)	37(1.8)*	271(1.8)	59(1.9)*	268(2.5)
	Grade 11	1992	10(0.7)	282(1.9)	55(1.5)	290(1.5)	36(1.6)	286(2.1)
		1984	8(0.7)	282(3.2)	52(1.4)	292(1.7)	40(1.3)	290(2.4)
Book report	Grade 4	1992	6(0.6)	192(3.7)	31(1.4)	203(2.2)	62(1.7)	211(1.4)
		1984	6(0.7)	192(7.0)	30(1.4)	206(2.7)	64(1.5)	206(2.0)
	Grade 8	1992	4(0.4)	264(4.5)	30(1.8)	272(2.2)	66(1.8)	277(1.2)
		1984	3(0.6)	265(5.7)	32(1.6)	267(2.2)	65(1.7)	271(2.5)
	Grade 11	1992	5(0.4)	272(3.8)	24(1.3)	282(1.8)	72(1.4)	290(1.4)
		1984	4(0.6)	266(4.9)	26(1.3)	282(2.5)	70(1.6)	295(1.7)
Other report	Grade 4	1992	4(0.5)	195(5.3)	29(1.0)	207(1.8)	67(1.1)	208(1.6)
		1984	3(0.6)	190(9.0)	25(1.7)	202(2.8)	72(1.8)	207(2.0)
	Grade 8	1992	4(0.4)	264(4.2)	27(1.2)	274(2.1)	69(1.3)	276(1.2)
		1984	3(0.4)	270(6.5)	24(1.3)	268(2.5)	74(1.5)	270(2.3)
	Grade 11	1992	5(0.3)	279(2.7)	37(1.3)	287(1.6)	58(1.3)	289(1.6)
		1984	5(0.7)	277(4.4)	33(1.0)*	287(2.2)	62(1.0)*	293(1.9)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

At grade 4, students who wrote book reports, letters, stories, poems, and plays three or more times the previous week performed significantly lower than did students who reported that they had not engaged in these activities the previous week. Eighth graders who reported writing three or more book reports, other reports, or plays the previous week did not perform as well as those who said they had not written these kinds of papers in the previous week. Likewise, at grade 11 students who said they had written book reports, other reports, letters, and stories three times or more in the previous week performed significantly lower than students who said they had not engaged in these types of activities in the previous week.

This association of lower performance with high frequency of writing, in part, might be explained by the difficulty students have in evaluating the types of assignments and classwork in which they engage. At the fourth grade, in particular, students may not be able to distinguish between work done for the language arts area and writing done for other areas. Also, it may reflect that the lower performing students are assigned more activities to complete.

When considering this association, it is important to keep in mind that for any given writing activity, few students (6 percent or less) reported engaging in the activity three or more times in the previous week.

Table 13.12

Trends in Types of Writing for English Class, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW MANY OF VARIOUS TYPES OF PAPERS THEY WROTE FOR ENGLISH CLASS LAST WEEK					
			Three or More		One or Two		None	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Letter	Grade 4	1992	6(0.5)	188(3.8)	33(1.1)	204(2.1)	61(1.3)	211(1.8)
		1984	6(0.6)	191(5.7)	32(1.5)	204(3.1)	62(1.6)	208(1.8)
	Grade 8	1992	4(0.4)	265(5.0)	23(1.2)	270(2.7)	73(1.3)	277(1.1)
		1984	4(0.7)	265(4.5)	17(1.1)*	264(2.1)	79(1.3)*	271(2.2)*
	Grade 11	1992	3(0.3)	269(4.4)	16(0.9)	279(1.9)	81(1.0)	290(1.4)
		1984	3(0.5)	272(4.7)	12(1.1)*	276(2.2)	84(1.1)	293(1.7)
Story	Grade 4	1992	6(0.6)	192(3.4)	40(1.6)	206(1.9)	53(1.8)	210(1.6)
		1984	6(0.8)	197(5.8)	32(1.9)*	204(3.2)	63(2.1)*	207(1.8)
	Grade 8	1992	6(0.5)	270(3.3)	46(2.0)	274(2.0)	49(2.2)	276(1.5)
		1984	4(0.5)	263(3.8)	37(1.7)*	268(2.4)	59(1.6)*	271(2.5)
	Grade 11	1992	6(0.6)	276(2.3)	35(1.1)	283(1.3)	59(1.1)	292(1.7)
		1984	6(0.5)	276(4.0)	34(1.6)	283(1.8)	60(1.6)	296(2.0)
Poem	Grade 4	1992	4(0.5)	197(4.0)	22(1.1)	202(2.3)	74(1.4)	210(1.5)
		1984	4(0.6)	194(6.0)	22(1.6)	200(2.8)	74(1.7)	207(1.8)
	Grade 8	1992	3(0.5)	272(4.8)	17(1.2)	272(3.3)	80(1.5)	276(1.1)
		1984	3(0.8)	269(8.4)	12(0.9)*	263(3.5)	85(1.3)*	270(2.2)
	Grade 11	1992	5(0.5)	280(3.3)	19(1.0)	282(1.8)	76(1.2)	289(1.4)
		1984	4(0.5)	286(4.0)	14(1.0)*	279(2.4)	82(0.9)*	292(1.8)
Play	Grade 4	1992	2(0.4)	177(6.5)	13(0.7)	193(3.1)	85(0.8)	210(1.5)
		1984	3(0.6)	181(6.6)	11(1.1)	196(3.5)	86(1.5)	207(1.7)
	Grade 8	1992	1(0.2)	257(7.1)	11(1.1)	271(2.9)	88(1.2)	276(1.3)
		1984	1(0.3)	266(9.1)	9(0.9)	263(4.3)	90(1.0)	270(1.9)
	Grade 11	1992	1(0.2)	265(11.3)	10(0.6)	280(2.9)	89(0.6)	289(1.4)
		1984	1(0.3)	264(9.2)	11(0.9)	280(2.6)	87(0.9)	292(1.8)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Another set of questions asked students about the ways in which their teachers responded to their papers. The responses of students in grades 8 and 11 are summarized in Table 13.13 and 13.14.

At grades 8 and 11, there was a significant increase in the percentage of students who reported that more than half the time their teachers commented on the ideas in their papers, the way they explained their ideas, the way they expressed their feelings, and on the words they used. In 1992, eleventh graders reported that more of their teachers commented on organization more than half the time and on neatness and handwriting about half the time. Most of these increases were matched by corresponding decreases in the "less than half the time" and "never or hardly ever" categories.

In comparing the writing proficiency of eighth and eleventh graders who reported on how frequently their teachers commented on aspects of their papers, several significant differences were found. At grade 8, in 1992, students who reported that more than half the time their teachers commented on the way they followed directions and the amount they wrote performed significantly lower than eighth graders who said their teachers commented on these aspects less than half the time or never or hardly ever.

Likewise, at grade 11, students who reported that more than half the time their teachers commented on the way they followed directions, the amount they wrote, and on neatness and handwriting had significantly lower proficiency than those who reported their teachers commented on these aspects never or hardly ever.

Table 13.13

Trends in Teachers' Comments on Completed Papers, Grade 8 and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN TEACHERS COMMENT ON ASPECTS OF THEIR PAPERS							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Ideas in Paper	Grade 8	1992	46(1.4)	274(2.0)	22(1.3)	273(2.8)	17(1.0)	276(3.9)	14(0.9)	268(3.8)
		1984	40(1.8)*	266(3.6)	23(1.3)	268(3.2)	17(1.4)	269(3.4)	18(1.4)*	267(3.8)
	Grade 11	1992	51(1.5)	288(1.9)	22(1.2)	286(3.1)	16(0.9)	286(4.2)	11(0.7)	286(3.3)
		1984	39(1.7)*	289(2.6)	23(2.0)	283(3.3)	23(2.3)*	288(4.4)	14(1.6)	288(5.9)
Way ideas explained	Grade 8	1992	45(1.5)	273(1.8)	24(1.5)	273(2.8)	18(0.9)	277(3.7)	13(0.8)	271(4.4)
		1984	37(1.7)*	266(3.5)	25(1.8)	267(3.5)	20(1.9)	267(3.3)	17(1.9)	271(5.0)
	Grade 11	1992	49(1.4)	288(1.7)	23(1.1)	285(3.2)	18(1.2)	289(3.6)	10(0.9)	286(2.6)
		1984	39(2.1)*	287(2.6)	24(2.1)	282(4.1)	22(2.0)	292(3.1)	13(1.5)	290(5.1)
Way feelings expressed	Grade 8	1992	40(1.1)	274(2.4)	20(1.4)	276(3.2)	20(1.0)	275(3.6)	20(1.1)	270(3.6)
		1984	32(2.2)*	265(3.4)	21(2.2)	268(4.0)	20(2.1)	271(3.8)	25(1.8)*	266(3.1)
	Grade 11	1992	41(1.8)	286(2.0)	22(1.1)	287(2.5)	19(1.2)	288(3.1)	18(1.2)	289(2.7)
		1984	30(2.2)*	285(3.1)	24(1.8)	285(4.3)	25(1.7)*	289(3.3)	19(1.6)	292(3.9)
Organization	Grade 8	1992	45(1.2)	274(2.2)	20(1.3)	272(3.0)	19(0.9)	276(3.0)	15(1.1)	271(4.6)
		1984	42(2.0)	267(3.0)	21(1.3)	266(3.4)	16(1.1)	270(3.2)	19(1.9)	267(3.7)
	Grade 11	1992	47(1.4)	288(2.0)	20(1.1)	286(2.8)	17(0.8)	287(3.0)	14(0.9)	287(3.0)
		1984	39(2.1)*	288(3.0)	21(1.8)	287(4.0)	22(1.6)	286(3.3)	16(1.4)	289(6.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Table 13.14

Trends in Teachers' Comments on Completed Papers, Grades 8 and 11, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN TEACHERS COMMENT ON ASPECTS OF THEIR PAPERS							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Follow directions	Grade 8	1992	43(1.3)	268(2.3)	19(1.3)	272(3.3)	18(1.1)	278(2.8)	20(1.1)	282(3.3)
		1984	41(1.8)	262(3.0)	17(1.7)	270(3.5)	19(1.8)	268(3.5)	21(1.5)	274(3.3)
	Grade 11	1992	32(1.3)	282(1.8)	17(1.2)	285(3.1)	23(1.3)	288(3.3)	28(1.1)	294(2.5)
		1984	30(2.4)	277(3.2)	16(1.4)	284(5.5)	22(1.8)	290(3.5)	31(1.8)	297(3.0)
Wrote enough	Grade 8	1992	38(1.3)	268(2.7)	20(1.3)	273(3.0)	21(1.2)	278(3.1)	20(1.0)	281(3.4)
		1984	33(1.9)	263(3.5)	23(1.8)	264(3.6)	23(1.5)	270(3.8)	20(1.5)	274(2.9)
	Grade 11	1992	31(1.2)	284(2.2)	20(1.1)	284(2.7)	26(1.2)	288(3.2)	23(1.1)	293(1.9)
		1984	26(1.9)	281(3.1)	18(1.7)	284(4.4)	26(2.2)	289(3.2)	28(2.1)	293(3.5)
Words	Grade 8	1992	43(1.4)	272(2.5)	18(1.3)	272(4.4)	19(1.2)	278(3.0)	18(1.0)	275(4.1)
		1984	37(2.3)*	264(3.0)	23(1.5)	266(3.4)	20(1.7)	271(4.1)	18(1.5)	270(4.4)
	Grade 11	1992	37(1.4)	286(2.1)	23(1.1)	285(2.5)	20(1.3)	288(3.2)	19(1.2)	291(2.7)
		1984	31(1.6)*	284(3.2)	24(1.7)	284(2.9)	22(1.4)	291(4.4)	22(1.7)	292(3.6)
Spelling, punctuation, and grammar	Grade 8	1992	55(1.7)	273(1.7)	18(1.1)	269(3.7)	16(1.0)	278(2.6)	11(0.9)	276(5.2)
		1984	51(1.9)	267(2.4)	20(1.9)	264(4.5)	15(1.3)	271(4.4)	13(1.5)	268(6.0)
	Grade 11	1992	49(1.0)	287(1.9)	18(1.0)	284(2.7)	18(1.0)	288(4.0)	14(0.8)	291(2.9)
		1984	44(2.3)	285(2.7)	18(1.5)	286(4.3)	20(1.9)	289(3.6)	17(1.7)	294(3.0)
Neatness and handwriting	Grade 8	1992	46(1.5)	271(1.7)	14(1.0)	268(3.7)	15(1.0)	279(3.5)	24(1.4)	278(3.4)
		1984	48(2.1)	265(2.6)	14(1.6)	270(4.0)	15(1.5)	268(5.2)	22(1.9)	270(3.3)
	Grade 11	1992	30(1.4)	278(2.3)	15(1.0)	285(3.3)	18(1.4)	291(2.3)	36(1.4)	294(2.5)
		1984	31(2.6)	277(3.2)	9(1.1)*	278(4.9)	15(1.3)	287(5.1)	43(2.5)*	296(2.3)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Table 13.15 summarizes fourth and eighth graders' responses to a related series of questions asking about the types of feedback (oral or written) that they received from teachers on their writing.

At grade 4, there was a significant decline in the percentage of students reporting that their teachers marked mistakes more than half the time and an

Table 13.15

Trends in Teachers' Feedback on Writing, Grades 4 and 8, 1984 to 1992

			STUDENTS' REPORTS ON HOW OFTEN TEACHERS PROVIDE TYPES OF FEEDBACK WHEN THEY WRITE							
			More Than Half the Time		About Half the Time		Less Than Half the Time		Never or Hardly Ever	
		Year	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof	Percent	Average Prof
Mark mistakes	Grade 4	1992	50(1.3)	211(1.7)	13(1.0)	205(3.1)	17(0.9)	206(2.5)	19(0.9)	204(3.0)
		1984	60(2.5)*	204(2.3)*	15(1.6)	206(5.3)	12(1.5)*	200(5.5)	12(1.6)*	203(4.8)
	Grade 8	1992	62(1.6)	277(1.7)	14(1.0)	272(3.3)	13(1.1)	271(3.4)	10(0.8)	262(5.3)
		1984	68(1.8)*	268(2.3)*	11(1.1)	260(5.8)	11(1.2)	257(6.7)	9(1.0)	260(7.2)
Write notes	Grade 4	1992	26(1.1)	205(2.4)	16(1.0)	212(2.6)	18(0.9)	214(2.3)	38(1.7)	206(2.0)
		1984	30(2.2)	203(3.1)	12(1.4)	204(4.3)	13(1.4)*	212(5.3)	43(2.2)	201(2.3)
	Grade 8	1992	45(2.6)	278(2.5)	19(1.5)	274(2.8)	18(1.2)	273(3.0)	17(1.3)	264(2.3)
		1984	38(1.9)	267(3.2)*	19(1.4)	266(4.0)	19(1.9)	265(3.6)	24(1.5)*	260(4.4)
Point out what is well done	Grade 4	1992	51(1.4)	208(1.8)	18(0.8)	208(2.7)	12(0.8)	213(3.3)	17(0.9)	207(3.0)
		1984	53(2.4)	203(2.4)	17(1.2)	205(4.6)	9(1.2)	202(6.0)	19(1.7)	204(4.0)
	Grade 8	1992	46(1.7)	278(2.4)	20(1.1)	272(2.3)	17(0.8)	273(3.2)	16(1.3)	267(2.7)
		1984	39(2.5)*	268(2.5)*	23(1.7)	266(3.8)	18(1.3)	264(4.1)	19(1.4)	259(5.6)
Point out what is not well done	Grade 4	1992	43(1.1)	209(2.0)	16(0.9)	210(3.3)	17(1.1)	208(2.7)	21(1.2)	207(2.2)
		1984	49(1.9)*	204(2.2)	16(1.7)	208(4.9)	13(1.5)	198(4.6)	19(1.6)	202(4.7)
	Grade 8	1992	55(1.7)	276(2.2)	20(1.1)	275(3.8)	14(1.1)	268(2.7)	10(0.9)	274(3.7)
		1984	53(2.9)	268(2.1)*	18(1.9)	263(4.6)	13(1.5)	263(5.5)	13(1.4)	260(6.3)
Make suggestions for next time	Grade 4	1992	49(1.4)	206(1.9)	17(1.0)	210(3.1)	14(0.8)	213(3.9)	18(1.0)	210(2.6)
		1984	49(2.3)	202(2.7)	17(1.6)	202(3.9)	15(1.4)	210(6.0)	17(1.9)	203(4.2)
	Grade 8	1992	51(1.8)	275(1.9)	19(1.2)	273(3.6)	16(1.0)	275(3.5)	14(1.4)	271(3.5)
		1984	48(2.1)	263(2.9)*	20(1.5)	271(4.2)	15(1.4)	266(4.2)	15(1.4)	264(5.0)
Show an interest in what you write	Grade 4	1992	61(1.2)	209(1.3)	17(0.9)	211(2.4)	11(0.7)	206(4.1)	10(0.8)	202(3.4)
		1984	60(2.2)	203(2.4)*	17(1.8)	208(5.8)	11(1.2)	201(6.6)	11(1.4)	204(4.5)
	Grade 8	1992	56(1.8)	277(2.0)	19(0.9)	272(3.3)	10(0.9)	268(4.1)	14(1.2)	268(3.7)
		1984	49(2.6)	266(3.1)*	20(1.6)	265(4.6)	15(1.5)*	264(4.1)	16(1.7)	263(5.2)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

increase in those who did so less than half the time and never or hardly ever. Also at grade 4, there was a significant increase in students reporting that their teachers wrote notes on their papers less than half the time and a decrease in the percentage whose teachers pointed out what was not done well more than half the time.

At grade 8, between 1984 and 1992, there was a significant decline in the percentage of students whose teachers marked mistakes more than half the time, as well as a decrease in the percentage whose teachers never or hardly ever wrote notes. There also was a significant increase in the percentage whose teachers pointed out what was done well more than half the time and a decrease in the percentage who less than half the time showed an interest in what their students wrote.

In comparing the writing proficiency of fourth and eighth graders who reported on how often their teachers provided different types of feedback, several significant associations were found. In 1992, at grade 4, students who reported that their teachers wrote notes to them about their writing more than half the time had significantly lower proficiency than those who reported that their teachers did so less than half the time.

At grade 8, students who reported that their teachers marked their mistakes or pointed out what they had done well more than half the time performed significantly higher than eighth graders who reported their teachers did so never or hardly ever. Also, eighth graders who reported that their teachers wrote notes on their writing half the time or more than half the time outperformed students who said their teachers never or hardly ever gave them this kind of feedback.

Trends in Computer Use

As educators explore the benefits of word processing and computer-delivered writing instruction, access to and use of computers becomes a key issue in America's schools.[92] Tables 13.16 and 13.17 summarize student responses to questions about the availability and use of computers at home and in school.

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[92] Selfe, Cynthia L., Rodrigues, Dawn, and Oates, William R. *Computers in English and the Language Arts.* Urbana, IL: National Council of Teachers of English, 1989.

McCurry, Nikki, and McCurry, Alan, "Writing Assessment for the 21st Century," *Computing Teacher,* 19(7), 35-37, 1992.

Table 13.16

Trends in Availability and Use of Computers, Grades 4, 8, and 11, 1984 to 1992

			STUDENTS' REPORTS ON COMPUTER USE					
			Grade 4		Grade 8		Grade 11	
		Year	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Use computer at home	Yes	1992	43(2.2)	213(2.6)	44(2.3)	280(3.9)	51(2.1)	295(1.9)
		1984	44(3.7)	203(4.5)	37(4.6)	268(7.0)	30(2.9)*	295(3.6)
	No	1992	57(2.2)	206(3.5)	56(2.3)	270(3.2)	49(2.1)	282(2.5)
		1984	55(3.7)	202(3.9)	63(4.6)	262(6.2)	70(2.9)*	289(3.0)
Use computer at library	Yes	1992	47(3.3)	206(3.8)	47(2.5)	276(2.9)	62(2.5)	287(2.0)
		1984	25(3.8)*	202(6.1)	20(3.9)*	264(6.8)	22(2.9)*	289(4.4)
	No	1992	54(3.3)	209(3.4)	53(2.5)	273(3.4)	38(2.5)	287(2.4)
		1984	75(3.8)*	203(3.1)	80(3.9)*	264(6.2)	78(2.9)*	291(2.9)
Use computer at friend's house	Yes	1992	38(2.0)	206(3.7)	44(2.6)	279(3.4)	42(2.5)	288(1.9)
		1984	39(4.5)	205(5.3)	43(5.1)	263(6.1)	32(2.9)*	290(4.1)
	No	1992	62(2.0)	209(3.0)	56(2.6)	271(2.4)	58(2.5)	288(2.2)
		1984	61(4.5)	202(3.6)	57(5.1)	264(6.7)	68(2.9)*	290(3.2)
Use computer to learn things	Yes	1992	83(2.0)	209(2.5)	73(2.1)	276(3.1)	72(1.9)	288(1.7)
		1984	68(3.1)*	204(3.0)	58(4.5)*	268(4.7)	55(3.0)*	292(2.9)
	No	1992	17(2.0)	208(3.9)	27(2.1)	270(4.0)	28(1.9)	287(2.5)
		1984	32(3.1)*	200(5.3)	42(4.5)*	257(7.9)	45(3.0)*	290(4.2)
Use computer to play games	Yes	1992	83(1.6)	211(2.6)	84(1.7)	275(2.6)	78(1.8)	288(1.6)
		1984	72(3.7)*	204(3.4)	84(3.7)	264(4.2)	76(2.5)	292(2.7)
	No	1992	17(1.6)	194(4.4)	15(1.7)	268(5.5)	22(1.8)	286(3.7)
		1984	28(3.7)*	202(5.1)	16(3.7)	265(13.4)	24(2.5)	288(4.6)
Use computer to write stories or papers	Yes	1992	57(2.3)	212(2.2)	73(1.9)	277(2.7)	84(1.9)	290(1.6)
		1984	23(3.7)*	194(9.0)	15(3.5)*	276(7.7)	19(2.2)*	295(5.2)
	No	1992	43(2.3)	204(4.3)	27(1.9)	265(3.2)	16(1.9)	275(4.4)
		1984	77(3.7)*	206(2.3)	85(3.5)*	261(5.7)	81(2.2)*	291(3.0)*

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selections of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

At grades 4, 8, and 11, there was a significant increase in the percentage of students reporting that they used computers at the library, to learn things, and to write stories or papers. At grade 11, there was also an increase in the number of students who reported using a computer at home and at a friend's house, and at grade 4 more students reported using a computer to play games. The increase in students who now use computers to write stories or papers was truly dramatic — in 1984 the range across the three grades was 15 to 23 percent and in 1992 it was 57 to 84 percent.

When asked how often they used a computer in school, significantly more fourth graders in 1992 reported using a computer two or three times a week, once a week, and less than once a week compared with fourth graders in 1984, and significantly fewer reported never using a computer. This represents a dramatic change from 1984, when 61 percent reported never using a computer in school, as opposed to just 16 percent in 1992. At grade 8, a similar trend exists, with significantly more students reporting using computers every day or two or three times a week, and far fewer never using a computer at school. Likewise, at grade 11, more students reported using a computer across all four time intervals and fewer reported never using a computer in school.

Since 1984, there has been a dramatic increase in the number of students using computers, and using them to write papers. However, in 1992, 16 percent of the fourth graders, 38 percent of the eighth graders, and 27 percent of the eleventh graders still reported never using a computer in school.

In comparing the writing proficiency of students who reported on their uses of computers, a few significant associations were found. At grade 4, in 1992, students who reported using computers to play games performed significantly higher on the writing assessment than those who said they did not. At grades 8 and 11, students who reported that they used a computer to write stories or papers outperformed students who said they did not. Also, eleventh graders who reported using a computer at home performed significantly higher than those who did not.

In examining students' proficiency and the frequency with which they reported using computers at school only one association was found. At grade 4, students who reported that they used a computer less than once a week performed significantly higher than those who said they never used a computer. At grades 8 and 11 the frequency with which students reported using a computer at school did not appear to be associated with significant differences in writing proficiency.

Table 13.17

Trends in Computer Use in School, Grades 4, 8, and 11, 1984 to 1992

		STUDENTS' REPORTS ON HOW OFTEN THEY USE A COMPUTER AT SCHOOL					
		Grade 4		Grade 8		Grade 11	
	Year	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Every day	1992	6(1.1)	194(11.9)	10(1.4)	277(7.1)	19(1.5)	290(2.3)
	1984	3(1.3)	210(11.0)	4(1.5)*	278(13.8)	12(2.0)*	295(6.8)
Two or three times a week	1992	19(1.8)	208(4.0)	15(2.0)	274(6.5)	11(1.3)	286(5.3)
	1984	8(1.7)*	200(15.0)	5(1.9)*	268(4.9)	6(1.3)*	293(9.5)
Once a week	1992	37(2.3)	208(3.4)	13(1.8)	282(4.5)	11(1.6)	283(3.8)
	1984	16(3.1)*	214(7.4)	8(2.8)	273(11.0)	6(1.5)*	287(10.5)
Less than once a week	1992	22(2.0)	216(4.3)	24(2.1)	276(3.3)	32(2.1)	291(2.9)
	1984	12(1.8)*	203(9.0)	17(3.6)	273(7.1)	21(2.6)*	292(4.5)
Never	1992	16(1.6)	200(3.5)	38(2.7)	270(3.0)	27(2.4)	284(3.5)
	1984	61(3.5)*	199(6.3)	67(4.2)*	260(6.2)	55(2.9)*	289(3.6)

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons. The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix for details). Percentages may not total 100 percent due to rounding or the selection of "I don't know" by a small percentage of students.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Writing Trend Assessment

Summary

Overall, students' reports on the value they place on writing reflected a moderate increase from 1984 to 1992. Increased percentages of fourth and eleventh graders reported that they valued writing as a tool for finding future employment. In addition, more eighth and eleventh graders reported writing stories or poems outside of school.

Student responses to questions about process strategies indicated a trend toward the use of more complex strategies. The majority of students are not only correcting their spelling, punctuation and grammar mistakes, they are also adding new ideas or information, and taking out parts they do not like.

Students' responses also revealed some changes in the comments teachers made on students' papers. Compared to 1984, eighth and eleventh graders in 1992 reported that their teachers were more likely to comment on the ideas and feelings expressed in students' papers. At the same time, fewer teachers of fourth and eighth graders were marking mistakes.

The most dramatic change appeared to take place in the use of computers inside and outside school, with a particularly sharp rise across all three grades in the number of students who used computers to write stories or papers.

Throughout the time period between 1984 and 1992, educators advocated changes in students' attitudes towards writing, in the kinds of writing students should do in and out of school, in the processes students should be engaged in as they write, and in the ways teachers should respond to students' writing. NAEP data indicate that some positive changes have occurred in the value some students place on writing, on the variety of ways some students use writing, in the nature of some teachers' responses to student writing, as well as in students' access to and use of computers.

Procedural Appendix

Overview of Procedures Used in the 1992 Science, Mathematics, Reading, and Writing Trend Assessments

This appendix provides more detailed information about the methods and procedures used in NAEP's 1992 trend assessments. The forthcoming *NAEP 1992 Technical Report* provides even more extensive information about these procedures.

This NAEP trend report is based on seven science assessments, six mathematics assessments, seven reading assessments, and four writing assessments, with the most recent assessment in each of the four curriculum areas having been conducted during the 1991-92 school year. The composition of each of the four trend assessments is described below. An explanation of NAEP's various trend and cross-sectional assessments conducted in 1992 can be found in *The NAEP Guide*.[93]

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[93] Mullis, I. V.S., *The NAEP Guide: A Description of the Content and Methods of the 1990 and 1992 Assessments* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1990).

Science

NAEP conducted trend assessments of the science achievement of in-school 9-, 13-, and 17-year-olds during the 1969-70, 1972-73, 1976-77, 1981-82, 1985-86, 1989-90, and 1991-92 school years. However, in the first assessment, 17-year-olds were assessed during the spring of the 1968-69 school year.

The science trend assessments have measured student achievement based on objectives developed by nationally representative panels of scientists, science educators, and concerned citizens. The objectives for each successive assessment were based on the framework used for the previous assessment with some revisions that reflected changes in content and trends in school science. Although changes were made from assessment to assessment, some questions were continued from one assessment to the next in order to measure trends across time. The objectives and questions which formed the basis for the 1986 trend assessment were used again in both 1990 and 1992. In 1989-90 and 1991-92, NAEP conducted trend assessments based on the *1985-86 Science Objectives*[94] that replicated procedures used in previous science assessments. The new results of the 1991-92 trend assessment are described in this report. In preparation for a 1994 science assessment — which subsequently has been delayed to 1996 — the National Assessment Governing Board under a contract to the Chief State School Officers developed a comprehensive science assessment framework for NAEP.[95]

The science trend assessment contained 63 multiple-choice questions at age 9, 83 multiple-choice questions at age 13, and 82 multiple-choice questions at age 17. The questions cover a range of science content areas, including topics from the life sciences, physical sciences, and earth and space sciences, and assessed students' abilities to understand basic scientific facts and principles, solve problems in scientific contexts, design experiments, interpret data and read tables and graphs, and understand the nature of science.

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[94] *Science Objectives: 1985-86 Assessment* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing, 1987).

[95] *Science Framework for the 1994 National Assessment of Educational Progress*, pre-publication draft, NAEP Science Consensus Project, Council of Chief State School Officers, National Assessment Governing Board, U.S. Department of Education.

Mathematics

NAEP has assessed the mathematics achievement of in-school 9-, 13-, and 17-year-olds six times: in the 1972-73, 1977-78, 1981-82, 1985-86, 1989-90, and 1991-92 school years. In 1990 and 1992, NAEP conducted both a trend assessment replicating procedures established in 1973 and used in each mathematics trend assessment since then; and a newly developed mathematics assessment which provided short-term trends between 1990 and 1992 for the nation and participating states. The results and procedures used in the latter assessment are fully described in *The STATE of Mathematics Achievement, NAEP's 1990 Assessment of the Nation and the Trial Assessment of the States*[96] and in *The NAEP 1992 Mathematics Report Card for the Nation and the States*.[97] Two additional reports were prepared and based on the newly developed mathematics assessments: *Can Students Do Mathematical Problem Solving?* and *Effective Schools and Instruction in Mathematics*.[98]

The trend assessment, however, forms the basis for the results and procedures discussed in this report. Each trend assessment contained a range of constructed-response and multiple-choice questions measuring performance on sets of objectives developed by nationally representative panels of mathematics specialists, educators, measurement experts, and other interested parties.[99] A set of the 1986 questions was reassessed in both 1990 and 1992. This set of questions contains 127 multiple-choice and 34 open-ended questions at age 9, 158 multiple-choice and 56 open-ended questions at age 13, and 231 multiple-choice and 56 open-ended questions at age 17.

The questions covered a range of content, including numbers and operations, measurement, geometry, and algebra. The process areas included knowledge, skills, application, and problem solving.

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[96] Mullis, I. V.S., Dossey, J. A., Owen, E. H., and Phillips, G. W., *The STATE of Mathematics Achievement: NAEP's 1990 Assessment of the Nation and the Trial Assessment of the States* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1991).

[97] Mullis, I. V.S., Dossey, J. A., Owen, E. H., and Phillips, G. W., *NAEP 1992 Mathematics Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

[98] Dossey, J. A., Mullis, I. V.S., Jones, C. O., *Can Students Do Mathematical Problem Solving?* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

Mullis, I. V.S., Dossey, J. A., Gorman, S., Latham, A. S., Jenkins, F., & Johnson, E. G., *Effective Schools and Instruction in Mathematics* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1994).

[99] *Math Objectives: 1985-86 Assessment* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1986).

Reading

NAEP has assessed students' reading performance at ages 9, 13, and 17 in seven national reading assessments conducted during the school years ending in 1971, 1975, 1980, 1984, 1988, 1990, and 1992.[100]

The reading tasks included in the trend assessment asked students to read and answer questions based on a variety of materials, including informational passages, literary text, and documents. Although some questions required students to provide written responses, most questions were multiple choice and were designed to assess students' ability to locate specific information, make inferences based on information in two or more parts of a passage, or identify the main idea in a passage. For the most part, these questions measured students' ability to read either for specific information or for general understanding. Although the reading assessments conducted through the 1970s underwent some changes from test administration to administration, the set of reading passages and items included in the trend assessments has been kept essentially constant since 1984, and most closely reflects the objectives developed for that assessment.[101] The reading trend assessment administered at age 9 included 54 passages and 118 questions, including five that required students to construct written responses. Thirteen-year-olds were asked 94 questions, eight of them requiring constructed responses, pertaining to 40 passages. Seventeen-year-olds were asked 112 questions, nine of them requiring constructed responses, pertaining to 34 passages.

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[100] NAEP also conducted a reading assessment in 1986. However, when they were first produced, the NAEP 1986 estimates of students' reading proficiency appeared anomalous, and the trend results were not disseminated to the general public. Concern about these apparently anomalous results prompted a thorough investigation of the NAEP technology by the ETS/NAEP staff, which was reported in NAEP 1985-86 *Reading Anomaly: A Technical Report*, and by an independent technical review panel convened by NCES, whose findings were summarized in *Report of the NAEP Technical Review Panel on the 1986 Reading Anomaly, the Accuracy of NAEP Trends, and Issues Raised by State-Level NAEP Comparisons*. As part of the 1988 assessment, NAEP conducted a study to provide further information about the 1986 reading anomaly. The analyses of the data collected in the study revealed some, but not all, of the reasons for the unusual assessment results in 1986. Further information on this issue is available in *Disentangling the NAEP 1986-96 Reading Anomaly: A Technical Report* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1989).

[101] *Reading Objectives: 1983-84 Assessment* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1984).

The results from a newly developed reading assessment also conducted in 1992 reflect the forward-looking *NAEP Reading Framework* created under the auspices of the National Assessment Governing Board and its contractor, the Council of Chief State School Officers.[102] For the 1992 national assessments at grades 4, 8, and 12 and The Trial State Assessment in reading at grade 4, NAEP developed a totally new set of reading tasks, the majority of which require students to write their responses. The results of that newly developed assessment are contained in *The NAEP 1992 Reading Report Card for the Nation and the States.*[103] Several additional reports based on that innovative assessment also are forthcoming.

Writing

This report is based on the 1983-84, 1987-88, 1989-90, and 1990-92 writing assessments of students in grades 4, 8, and 11. In all four assessments, the same tasks were included verbatim and were administered in the same manner to comparable samples of students. The writing tasks and background questions were designed to measure aspects of writing performance and related factors that were designated as important by a nationally representative panel of writing specialists, educators, and concerned citizens. The primary objective of the trend assessment was to measure students' ability to write for various purposes; related objectives were to evaluate the extent to which students managed the writing process, controlled the forms of written language, and valued writing.[104] At each grade, students were administered six different writing tasks.

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[102] *Reading Framework for the 1992 National Assessment of Educational Progress* (Washington, DC: National Assessment Governing Board, U.S. Department of Education).

[103] Mullis, I. V.S., Campbell, J. R., and Farstrup, A. E., *NAEP 1992 Reading Report Card for the Nation and the States* (Washington, DC: National Center for Education Statistics, U.S. Government Printing Office, 1993).

[104] *Writing Objectives: 1988 Assessment* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1987).

The Design of the Science and Mathematics Trend Assessments

At each of the three ages assessed, both the science and mathematics trend assessments consisted of three different 15-minute segments or "blocks" of content questions, each also containing a small set of background questions that pertained to students' experiences and instruction with the particular subject area being assessed (i.e., either science or mathematics).

The blocks were assembled three to a booklet, together with a background questionnaire that was common to all booklets. This questionnaire included questions about demographic information as well as home environment.

At ages 9 and 13, the blocks were placed in three booklets, each containing one block of mathematics questions, one block of science questions, and one block of reading questions. The reading block in these booklets is not used in the reading trend assessment, but is included in order to preserve the context effects of previous assessments. To replicate past procedures, at age 17, two booklets were used. One contained two mathematics blocks and one science block, while the other contained two science blocks and one mathematics block.

At all three ages, to replicate past procedures, the science and mathematics questions were administered using a paced audiotape. The tape recording that accompanied the booklets standardized timing and was intended to help students with any difficulty they might have in reading the questions. Thus, in an administration session, all students were being paced through the same booklet.

The Design of the Reading and Writing Trend Assessments

The reading trend assessment consisted of ten 15-minute blocks of reading passages and questions at each of three age/grade levels, while the writing trend assessment included five 15-minute blocks. Each writing block contained one prompt, except one block which contained two short prompts, for a total of six prompts. In addition, each content block contained a short set of background questions. The background questions in the reading blocks pertained to students' reading habits and experiences, while those in the writing blocks asked about students' writing practices, instruction, and attitudes.

In keeping with procedures used in previous reading and writing trend assessments, the reading and writing blocks were assembled into six booklets at each age/grade assessed, with each pair of reading or writing blocks appearing in one of the booklets. Each student participating in the reading and writing assessments received a booklet containing three blocks of questions as well as a six-minute section of background questions about demographic information and the students' home environment.

Sampling and Data Collection

Sampling and data collection activities for the 1992 trend assessments were conducted by Westat, Inc. Based on procedures used since the inception of NAEP, the data collection schedule was 13-year-olds/eighth graders in the fall (October to December, 1991), 9-year-olds/fourth graders in the winter (January to mid-March, 1992), and 17-year-olds/eleventh graders in the spring (mid-March to May, 1992). Although only 9-, 13-, and 17-year-olds were assessed in science and mathematics, both age- and grade-eligible students were assessed in reading and writing. Age eligibility was defined by calendar year for 9- and 13-year olds, while the birth date range for 17-year-olds was from October, 1974 through September 30, 1975.

As with all NAEP national assessments, students attending both public and private schools were selected for participation based on a stratified, three-stage sampling plan. The first and second stages included defining geographic primary sampling units (PSUs), which are typically groups of contiguous counties, but sometimes a single county; classifying the PSUs into strata defined by region and community type; and randomly selecting schools, both public and private, within each PSU selected at the first stage. The third stage involved randomly selecting students within a school for participation. Some students selected (fewer than 6 percent) were excluded because of limited English proficiency or severe disability.

The student sample sizes for the trend assessments as well as the school and student participation rates are presented in the following tables. Because students within schools were randomly assigned to either mathematics/science or reading/writing assessment sessions subsequent to their selection for participation in the 1992 assessments, the school and student participation rates shown are for all four subject areas combined. However, based on the sampling design, these rates are also the best estimates for each individual subject area. They are included in the individual tables for each subject area for convenience in comparing across assessments years. For assessments conducted prior to 1984, the school and student participation rates were obtained from the Public Use Data Tape User Guides. Figures for more recent assessments then were obtained from the Reports on the NAEP Field Operation and Data Collection Activities, prepared by Westat, Inc. Although sampled schools that refused to participate were replaced, school cooperation rates were computed based on the schools originally selected for participation in the assessments. The student completion rates represent the percentage of students assessed of those invited to be assessed, including in follow-up sessions when necessary.

TABLE A.1

Student Sample Sizes for Science Trend Scaling

	1977	1982	1986	1990	1992
Age 9	17,345	1,960	6,932	6,235	7,335
Age 13	25,653	7,873	6,200	6,649	5,909
Age 17 (in school)	31,436	7,974	3,868	4,411	4,359
Total	74,434	17,817	17,000	17,295	17,603

TABLE A.2

Science Trend School Cooperation and Student Response Rates

	Age	Percentage of Schools Participating	Percentage of Student Completion
1970	9	–	88.0
	13	–	85.6
	17	–	74.5
1973	9	93.9	91.0
	13	93.8	84.6
	17	92.4	73.6
1977	9	91.5	88.6
	13	91.3	86.2
	17	89.5	73.1
1982	9	88.3	90.5
	13	89.2	85.5
	17	86.5	74.2
1986	9	88.7	92.9
	13	88.1	89.2
	17	82.7	78.9
1990	9	87.0	92.5
	13	89.0	90.2
	17	79.0	82.1
1992	9	88.0	94.1
	13	85.0	90.9
	17	82.0	83.2

TABLE A.3
Student Sample Sizes for Mathematics Trend Scaling

	1978	1982	1986	1990	1992
Age 9	14,752	12,038	6,932	6,235	7,335
Age 13	24,209	15,758	6,200	6,649	5,909
Age 17 (in school)	26,756	16,319	3,868	4,411	4,359
Total	65,717	44,115	17,000	17,295	17,603

TABLE A.4
Mathematics Trend School Cooperation and Student Response Rates

	Age	Percentage of Schools Participating	Percentage of Student Completion
1973	9	93.9	90.9
	13	93.8	84.2
	17	92.4	73.5
1978	9	91.5	87.2
	13	91.5	85.2
	17	89.5	73.2
1982	9	88.3	90.5
	13	89.2	85.5
	17	86.5	74.2
1986	9	88.7	92.9
	13	88.1	89.2
	17	82.7	78.9
1990	9	87.0	92.5
	13	89.0	90.2
	17	79.0	82.1
1992	9	88.0	94.1
	13	85.0	90.9
	17	82.0	83.2

TABLE A.5

Student Sample Sizes for Reading Trend Scaling

	1971	1975	1980	1984	1988	1990	1992
Age 9	23,201	21,697	21,159	22,291	3,782	4,268	4,944
Age 13	25,545	21,393	22,330	22,693	4,005	4,609	3,965
Age 17 (in school)	23,661	19,624	18,103	25,193	3,652	4,383	4,447
Total	72,407	62,714	61,592	70,177	11,439	13,260	13,356

TABLE A.6

Reading Trend School Cooperation and Student Response Rates

	Age	Percentage of Schools Participating	Percentage of Student Completion
1971	9	92.5	90.9
	13	92.0	84.2
	17	90.5	73.5
1975	9	93.9	87.2
	13	92.8	85.2
	17	91.0	73.2
1980	9	94.5	90.5
	13	93.2	85.5
	17	90.5	74.2
1984	9	88.6	92.9
	13	90.3	89.2
	17	83.9	78.9
1988	9	87.2	92.5
	13	92.7	90.2
	17	78.1	82.1
1990	9	87.0	92.5
	13	89.0	90.2
	17	79.0	82.1
1992	9	88.0	94.1
	13	85.0	90.9
	17	82.0	83.2

TABLE A.7

Sample Sizes for the Writing Trend Assessment by Task and Scoring Method

		1984 GRADE			1988 GRADE			1990 GRADE			1992 GRADE		
Writing Task	**Scoring Method**	**4**	**8**	**11**	**4**	**8**	**11**	**4**	**8**	**11**	**4**	**8**	**11**
Informative													
Plants	Primary	656	–	–	1285	–	–	1416	–	–	1677	–	–
XYZ Company	Primary	544	616	–	1152	1334	–	1288	1489	–	1583	1333	–
Appleby House	Primary	530	588	599	925	1256	1041	1111	1396	1277	1337	1249	1264
Food on the Frontier	Primary	–	603	629	–	1339	1212	–	1503	1401	–	1316	1447
Food on the Frontier	Holistic	–	2233	2373	–	1339	1209	–	1500	1399	–	1308	1436
Job Application	Primary	–	–	603	–	–	1169	–	–	1424	–	–	1403
Persuasive													
Spaceship	Primary	611	–	–	1258	–	–	1367	–	–	1653	–	–
Spaceship	Holistic	2025	–	–	1256	–	–	1359	–	–	1574	–	–
Spaceship	Mechanics	–	–	–	481	–	–	–	–	–	678	–	–
Radio Station	Primary	585	612	–	1234	1364	–	1386	1512	–	1650	1362	–
Dissecting Frogs	Primary	–	641	–	–	1356	–	–	1518	–	–	1359	–
Rec. Opportunities	Primary	–	494	521	–	1372	1242	–	1498	1415	–	1317	1416
Rec. Opportunities	Holistic	–	2228	2354	–	1364	1238	–	1496	1411	–	1309	1406
Rec. Opportunities	Mechanics	–	473	517	–	516	497	–	–	–	–	563	566
Space Program	Primary	–	–	632	–	–	1195	–	–	1451	–	–	1427
Bike Lane	Primary	–	–	636	–	–	1178	–	–	1424	–	–	1425
Imaginative													
Flashlight	Primary	609	–	–	614	–	–	702	–	–	850	–	–
Flashlight	Holistic	2015	–	–	611	–	–	697	–	–	840	–	–

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TABLE A.8

Writing Trend School Cooperation and Student Response Rates

	GRADE	PERCENTAGE OF SCHOOLS PARTICIPATING	PERCENTAGE OF STUDENT COMPLETION
1984	4	88.6	92.5
	8	90.3	90.3
	11	83.9	82.2
1988	4	87.2	92.3
	8	92.7	88.2
	11	78.1	77.4
1990	4	87.0	92.5
	8	89.0	90.2
	11	79.0	82.1
1992	4	88.0	94.1
	8	85.0	90.9
	11	82.0	83.2

Scoring the Booklets

Materials from NAEP's 1992 assessments, including the trend assessments, were shipped to National Computer Systems (NCS) in Iowa City, Iowa, for processing. Receipt and quality control were managed through a sophisticated bar-coding and tracking system. After all appropriate materials were received from a school, they were forwarded to the professional scoring area, where the responses to the constructed-response questions were evaluated by trained staff using guidelines prepared by NAEP. Each constructed-response question had a unique scoring guide that defined the criteria to be used in evaluating students' responses. Subsequent to the professional scoring, the booklets were scanned, and all information was transcribed to the NAEP database at ETS. Each processing activity was conducted with rigorous quality control. An overview of the professional scoring for mathematics, reading, and writing follows (no constructed-response questions were scored for science).

Scoring the Mathematics Constructed-Response Questions

Most of the constructed-response mathematics trend items were scored on a right/wrong basis. The scoring guides identified the correct or acceptable answers for each item in each block. The scores for these items included a 0 for no response, a 1 for a correct answer, or a 2 for an incorrect or "I don't know" response. Because of the straightforward nature of the scoring, lengthy training was not required. In an orientation period, the readers were trained to follow the procedures for scoring the mathematics items and given an opportunity to become familiar with the scoring guides, which listed the correct answer for the items in each of the blocks.

During the scoring, every tenth booklet in a session was scored by a second reader to provide a quality check. These quality checks were recorded on a separate sheet with the few discrepancies noted, and the scores were corrected. For the most part, this entailed providing a score because one had not been coded. In total, over 380,000 answers were read and classified, including approximately 130,000 responses at age 9, 100,000 at age 13, and 150,000 at age 17.

Scoring the Reading Constructed-Response Questions

The 1992 reading trend assessment included five questions at age 9 for which students were required to construct written responses, seven such questions at age 13, and eight such questions at age 17. Some of the questions were administered to more than one age group of students.

The scoring guides for the constructed-response reading questions focused on students' ability to perform various reading tasks — for example, identifying the author's message or mood and substantiating their interpretations, making predictions based on given details, supporting an interpretation, and comparing and contrasting information.

The guides for the reading items varied somewhat, but typically included the distribution of score points shown below.

Outline for Scoring of Constructed-Response Reading Trend Assessment Items

SCORE	
4	**ELABORATED REFERENCE OR INTERPRETATION.** These responses exceeded the requirements of the task by including illustrative examples or details and demonstrating a high level of cohesiveness.
3	**SATISFACTORY REFERENCE OR INTERPRETATION.** These responses identified at least two relevant examples or reasons to support a given interpretation.
2	**MINIMAL REFERENCE OR INTERPRETATION.** These responses did not provide evidence to support a stated interpretation.
1	**UNSATISFACTORY REFERENCE OR INTERPRETATION.** These responses did not provide an interpretation, but instead digressed or avoided the task.
0, 7, 8, 9	These responses were, respectively, blank, indecipherable, completely off-task, or included a statement to the effect that the student did not know how to do the task. (In the analysis, scores of 7, 8, and 9 were collapsed into the score point of 9).

Some of the guides included secondary scores, which typically involved categorizing the kind of evidence or details the student used as support for an interpretation. The document literacy items, most of which required short answers, were scored on a right/wrong basis. The number of reading responses rated was 10,153 at age 9, 10,514 at age 13, and 12,589 at age 17.

The training program for the trend assessment was carried out on all the questions given to one age group at a time. Because the purpose of the open-ended reading scoring was to measure trends from the 1984 assessment, preparation for training included rereading hundreds of 1984 responses and bundling them for training purposes. In order to ensure continuity with the past scoring of the trend items, as least half of the sample papers in the training sets were taken from the 1984 training sets, and previously scored 1984 booklets were masked to ensure that scoring for training and the subsequent trend reliability scoring would be done without knowledge of the previous scores given.

The actual training was conducted by ETS staff assisted by NCS's scoring director and team leaders. Training began with each reader receiving a photocopied packet of materials consisting of a scoring guide, a set of 15 to 20 scored samples, and an additional 20 to 40 response samples to be scored. The trainers reviewed the scoring guide, explained all the applicable score points, and elaborated on the rationale used to arrive at a particular score. The readers then reviewed the 15 to 20 scored samples, as the trainers clarified and elaborated on the scoring guide. After this explanation, the additional samples were scored and discussed until the readers were in agreement. If necessary, additional packets of 1984 responses were used for practice scoring.

As a further step to achieve reliability with 1984, a 25 percent sample of the 1984 responses was scored on separate scoring sheets following the formal training session. These sheets were key entered, and a computerized report was generated comparing the new scores with those assigned in 1984. After some further discussion, scoring of the 1992 responses began. Two reliability studies were conducted as part of this scoring. For the 1992 material, 25 percent of the open-ended responses were scored by a second reader to produce interreader reliability statistics. In addition, a trend reliability study was conducted by rereading 20 percent of the 1984 responses. The reliability information is shown in Table A.9.

Table A.9

Reading Trend Assessment Percent Exact Agreement Between Readers

	1984 PAPERS RESCORED IN 1992		1992 PAPERS SCORED TWICE	
Age	Mean Percent Agreement	Range of Agreement	Mean Percent Agreement	Range of Agreement
9	82.2	78.2-87.1	81.9	80.3-83.4
13	75.4	70.3-79.0	74.2	67.1-80.9
17	82.4	76.4-86.2	82.1	75.8-87.0

Note: The reading scoring was generally based on 5 scoring categories.

Scoring the Writing Tasks

Primary Trait Scoring. A primary trait scoring guide was developed for each writing task to focus raters' attention on how successfully students' responses accomplished the task set forth in the prompt. As illustrated in the introduction to Part IV of this report, the guides typically defined five levels of task accomplishment — not rated, unsatisfactory, minimal, adequate, and elaborated — based on the rhetorical demands of the task. (A few of the scoring guides did not define an "elaborated" category as it was not appropriate to do so given the nature of the task.)

Because the results for the 1984 and 1988 trend assessments were based on a scoring of both 1984 and 1988 papers conducted in 1988, the undertaking for writing trend scoring in both 1990 and 1992 involved replicating the standards used in 1988. The procedure for training readers proceeded as outlined above for the reading trend assessment scoring, except that the writing scorers were trained using 1988 sample papers and practiced with a 25 percent sample of 1988 writing responses. As part of the scoring, two reliability studies were conducted. For the 1992 responses, 25 percent of the papers were scored by a second reader to produce interrater reliability statistics. In addition, a trend reliability study was conducted to ensure that the scoring procedures were consistent with those used in 1988. The results of these studies are presented in Table A.10.

Table A.10

Writing Trend Assessment Percent Exact Agreement Between Readers for Primary Trait Scoring

	1988 PAPERS RESCORED IN 1992		1992 PAPERS SCORED TWICE	
Grade	Mean Percent Agreement	Range of Agreement	Mean Percent Agreement	Range of Agreement
4	84.7	76.6-92.0	83.8	79.7-87.2
8	80.0	71.2-86.2	80.4	71.7-91.5
12	85.7	82.9-90.2	78.9	67.4-92.1

Note: The primary trait scoring was based on 5 scoring categories.

Holistic Scoring. To offer another perspective on students' writing abilities, selected tasks included in the trend assessment were scored holistically for overall fluency (i.e., a global view of the ideas, language facility organization, mechanics, and syntax of each paper taken as a whole). As previously noted, these tasks were "Spaceship" and "Flashlight" at grade 4, and "Recreation Opportunities" and "Food on the Frontier" at grades 8 and 11. Trained readers evaluated the relative fluency of students' writing on a 6-point scale. A small percentage of papers — such as those that were blank or undecipherable — were not rated.

The holistic scale was anchored by a chief reader and assistant chief reader chosen for their expertise in holistic scoring. They, together with the table leaders and ETS staff members, studied the pool of 1992 student responses to select papers that represented each point on the holistic scale, and then used these sample papers to train the raters. In addition, for each item, a random sample of 50 papers from across the three prior assessment years was drawn and evaluated by the group for use as practice papers in the training. Using the sample papers as a guide, the readers were asked to determine whether papers corresponded to the top half or the bottom half of the holistic scale and then to make finer distinctions between adjacent points on the scale. Because the emphasis of the holistic scoring was to detect trends across time at each of the three grade levels assessed, when a task was given at more than one grade level, responses were rated separately for each grade. A training session preceded the scoring of responses to each task at each grade level.

Because student papers are evaluated relative to one another in holistic scoring — rather than against specific criteria, as with primary trait scoring — the distribution of scores for the total sample of papers should be approximately normal, with scores evenly distributed around the center of the scale. To detect changes in writing fluency across time at each grade level, papers from the 1984, 1988, 1990, and 1992 assessments were randomly mixed prior to scoring. Thus, if more papers from one or another assessment were judged to be in the "top half" of the scale, the results would indicate changes across time in overall writing fluency. Twenty percent of the papers scored holistically were scored again by a second reader to provide information on interrater scoring agreement. These data are presented in Table A.11.

Table A.11

Writing Trend Assessment Percent Agreement for Adjacent Scores for Holistic Scoring of the 1984, 1988, 1990, and 1992 Papers Conducted in 1992

	1992 HOLISTIC SCORING		
	4	8	11
Spaceship	94.0	–	–
Flashlight	91.7	–	–
Recreation Opportunities	–	93.1	92.9
Food on the Frontier	–	90.7	95.5

Note: The holistic scoring was based on 7 scoring categories. Adjacent scores did not differ by more than one category.

Since certain writing items included in the writing trend assessments were submitted to both holistic and primary trait scoring, it is also possible to examine the relationship between the two sets of scores. As shown in Table A.12, the correlations range from .34 to .70. While the two scoring measures are clearly related, it is evident that they capture somewhat different aspects of writing performance. The primary trait score is closely tied to the features of specific writing tasks, providing a measure of students' success in accomplishing the assigned purpose of the writing. Alternatively, the holistic score provides a general measure of writing fluency, since the impression marks that raters give are affected by writers' attention to organization, adherence to the conventions of written English, word choice, handwriting, and quality of ideas.

Table A.12

Correlation Coefficients Between Primary Trait and Holistic Scores

	1984 PAPERS			1988 PAPERS			1990 PAPERS			1992 PAPERS		
	4	8	11	4	8	11	4	8	11	4	8	11
Spaceship	.66	–	–	.70	–	–	.68	–	–	.59	–	–
Flashlight	.64	–	–	.59	–	–	.66	–	–	.63	–	–
Recreation Opportunities	–	.34	.48	–	.39	.44	–	.38	.44	–	.42	.46
Food on the Frontier	–	.43	.43	–	.46	.38	–	.49	.45	–	.52	.44

Mechanics Scoring. To provide for an examination of trends in students' control of the conventions of written English, NAEP evaluated a random subsample of the 1992 writing responses using the mechanics scoring criteria it used to evaluate writing responses from the 1984, 1988, and 1990 assessments.[105] One task at each grade level was selected for the mechanics scoring; these tasks were "Spaceship" at grade 4 and "Recreation Opportunities" at grades 8 and 11. A random probability sample of approximately 600 responses to each item at each grade level was selected for evaluation. To ensure that the comparisons between Black and White students were reasonably precise, Black students were oversampled. Readers were trained by practicing on a 10 percent sample of the 1990 papers. Another 10 percent sample of essays previously scored for mechanics from the 1988 and 1990 assessments was rescored for reliability. A comparison of the 1992 data with the original scores indicated a between-year reliability ranging from .81 to .86 across the three grade levels.

In the mechanics scoring, each response was analyzed for a variety of aspects of spelling, punctuation, grammar, word choice, and syntax by

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[105] Applebee, A. N., Langer, J. A., and Mullis I. V.S., *Grammar, Punctuation, and Spelling: Controlling the Conventions of Written English* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1987).

English teachers who had been trained in the use of detailed criteria. The entire text of the scored papers, with the scoring marks, was then entered into a computer-readable database to provide for the subsequent analyses.

An outline of the features of writing mechanics included in the scoring and analysis is provided below.

I. Sentence Types

1. Simple — A sentence that contains a subject and a verb. It may also have an object subject complement, phrase, appositive, nominative absolute, or verbal. Also, a word group used in dialogue, for emphasis, or as an exclamation that is not an independent clause.
2. Compound — A sentence containing two or more simple sentences joined by something other than a comma.
3. Complex (and compound-complex) — A sentence that contains at least one independent clause and one dependent clause.
4. Run-On Sentence
    a. Fused — A sentence containing two or more independent clauses with no punctuation or conjunction separating them.
    b. On and on — A sentence consisting of four or more independent clauses strung together with conjunctions.
    c. Comma splice — A sentence containing two or more independent clauses separated by a comma instead of a semicolon or a coordinating conjunction.
5. Fragment — A word group, other than an independent clause, written and punctuated as a sentence.

II. Faulty Sentence Construction

(These scores are in addition to the sentence types.)

1. Agreement Error — A sentence in which at least one of the following is present: subject/verb do not agree, pronoun/antecedent do not agree, noun/modifier do not agree, subject/object pronoun is misused, or verb tense shifts.

2. Awkward Sentence (The awkward categories are listed in order of category precedence, since only one score was given to a sentence.)
   a. Faulty parallelism — A parallel construction that is semantically or structurally dysfunctional.
   b. Unclear pronoun reference — A pronoun's antecedent is unclear.
   c. Illogical construction — Faulty modification or a dangling modifier or a functionally misarranged or misproportioned sentence.
   d. Other dysfunctions — A sentence containing an omitted or extra word or a split construction that definitely detracts from readability.

III. Punctuation Errors

Every error of commission and error of omission was coded for commas, dashes, quotation marks, semicolons, apostrophes, and end marks. The most informal rules of usage were used, with the writer receiving the benefit of any doubt.

IV. Word-Level Conventions

1. Word Choice — The writer needs a word that is different from the one written. This category also includes attempts at a verb, adjective, or adverb form that is nonexistent or unacceptable.
2. Spelling — In addition to a misspelling, this category includes word-division errors at the end of a line, two words written as one, one word written as two, superfluous plurals, and groups of distinguishable letters that do not make a legitimate word.
3. Capitalization — A word is given a capitalization error score if the first word in a sentence is not capitalized, if a proper noun or adjective within a sentence is not capitalized, and if the pronoun "I" is not capitalized.

The mechanics scoring was designed to allow the writer as much flexibility as possible under existing conventions of correct writing consequently, any time two authorities on mechanics disagreed, the more informal interpretation was used.

Because the papers were entered into a computer-readable database, the number of words per paper, number of words per sentence, and number of letters per word were tabulated by computer.

As discussed in Chapter 12, the agreement errors increased significantly in 1992. In checking that the statistics for agreement errors in 1992 were correct, the assessment coordinator read all of the papers of students whose responses contained agreement errors in more than 50 percent of the sentences. This was done to determine whether the correct number of agreement errors had been recorded into the data base. In all cases, scorers had accurately identified agreement errors, albeit in a small number of papers. Thus, a real increase in total agreement errors stemmed from comparatively few student responses.

Weighting the Data. After the assessment information had been compiled in the NAEP database, the data were weighted according to the population structure. The weighting for the samples reflected the probability of selection for each student as a result of the sampling design, adjusted for nonresponse. Through poststratification, the weighting assured that the representation of certain subpopulations corresponded to figures from the U.S. Census and the Current Population Survey.

Data Analysis and IRT Scaling

Analyses were then conducted to determine the percentage of students who gave various responses to each cognitive and background question. Item response theory (IRT) was used to estimate average proficiency for the nation and various subgroups of interest within the nation. IRT scaling was performed separately within each age/grade level for each of the four trend assessments. Each of the four assessments employs slightly different steps in data analysis and IRT scaling. These steps are described in detail in the *1992 NAEP Technical Report* for each subject area. Because these descriptions are rather lengthy they are not repeated in this appendix.

IRT models the probability of answering an item correctly as a mathematical function of proficiency or skill. The main purpose of IRT analysis is to provide a common scale on which performance can be compared across groups, such as those defined by age, assessment year, or subpopulations (e.g., race/ethnicity or gender).

Students do not receive enough questions about a specific topic to provide reliable information about individual performance. Traditional test scores for individual students, even those based on IRT, would contribute to misleading estimates of population characteristics, such as subgroup means and percentages of students at or above a certain proficiency level. Instead, NAEP constructs sets of plausible values designed to represent the distribution of proficiency in the population.[106] A plausible value for an individual is not a scale score for that individual but may be regarded as a representative value from the distribution of potential scale scores for all students in the population with similar characteristics and identical patterns of item response. Statistics describing performance on the NAEP proficiency scale are based on these plausible values. They estimate values that would have been obtained had individual proficiencies been observed — that is, had each student responded to a sufficient number of cognitive items so that proficiency could be precisely estimated.

The reading trend scale was constructed based on the 1983-84 assessment and the trend scaling included all previous reading assessments. The science and mathematics trend scales were developed based on the 1986 science and mathematics assessments, respectively, and also included previous assessments. For the 1992 mathematics, reading, and science trend assessments, separate IRT scales were fit within each grade. These scales were linked to the previously established scales within each subject area via a common population linking procedure.[107] The initial trend scaling, however, did not include the 1969-70 or 1973 science assessments, or the 1973 mathematics assessment. To provide a link to the early assessments for the nation and subgroups defined by race/ethnicity, gender, and region at each of three age levels, estimates of mean proficiency levels were extrapolated from previous analyses.

These extrapolated estimates were obtained by assuming that the relationship within a given age level between the logit of a subgroup's mean p-value (i.e., mean proportion correct) and its respective proficiency mean was linear and that the same line held for all assessment years and for all subgroups within the age level. Under this assumption, the between-year difference of the mean proficiency values of a subgroup for a pair of assessment years is equal to a constant (B) times the between-year difference of the logits of the mean p-value of that subgroup for the same two years. For each age level, a mean p-value estimated using a common set of items was available for adjacent assessments. For science, these assessments included 1970 to 1973, 1973 to 1977, and 1977 to 1982. The adjacent assessments used for mathematics were 1973, 1978, and 1982. Then, using science as an example, the constant B was estimated by a regression (through the origin) of the difference between proficiency means in 1977 and 1982 on the corresponding difference between the logits of the mean p-values for these two years. All subgroups in a given age were included in the regression. For example, the estimate of the 1973 proficiency mean for a subgroup was then obtained as the sum of the 1977 subgroup mean proficiency and B times the difference between the logits of the 1973 and 1977 subgroup mean p-values (for items common to 1973 and 1977). The same procedure was used for extrapolating the 1973 mean p-value results on the mathematics IRT scale. The only difference was that the mean p-value results were for the 1973, 1978, and 1982 assessments in mathematics, rather than for the 1973, 1977, and 1982 assessments. For science, however, results were extrapolated for two assessments. Therefore, after estimating the 1973 subgroup mean proficiency, the 1970 mean proficiency for the subgroup was estimated by the 1973 mean proficiency estimate plus B times the difference between the logits of the 1970 and 1973 subgroup mean p-values (for items common to 1970 and 1973).

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[106] For theoretical justification of the procedures employed, see Robert J. Mislevy, "Randomization-Based Inferences About Latent Variables from Complex Samples," *Psychometrika*, 56 (2), 177-96, 1988).

For computational details, see *Focusing the New Design: NAEP 1988 Technical Report* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990) and the *1992 NAEP Technical Report*.

[107] Yamamoto, K. & Mazzeo, J., "Item Response Theory Scale Linking in NAEP," *Journal of Educational Statistics*, Vol. 17, 155-73, 1992.

For the trend writing assessments, a scale ranging from 0 to 500 was created, using a generalized partial-credit (GPC) model.[108] Recently developed by ETS and first used in 1992, the generalized partial-credit model permits the scaling of questions scored according to multi-point rating schemes. The model takes full advantage of the information available from each of the student response categories used for these more complex performance tasks. A separate IRT scale was fit within each grade. These three within-grade scales were then linked together on the basis of common items using the Stocking-Lord transformation.[109] The metric of the resulting linked scales was set to a mean of 250 and a standard deviation of 50 across the three grades.

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[108] Muraki, E., "A Generalized Partial Credit Model: Application of an EM Algorithm," *Applied Psychological Measurement*, 16(2). 159-176, 1992.

[109] Stocking, M. L. & Lord, F. M., "Developing a Common Metric in Item Response Theory," *Applied Psychological Measurement*, Vol. 7, 201-10, 1983.

There was an unusually large, and statistically significant, increase in mean proficiency in the grade 8 writing trend between 1990 and 1992. There was also a significant decrease in the writing trend mean proficiencies between 1988 and 1990. A study was conducted to investigate the possibility that the measurement procedures employed were producing these results. The procedures used in this study are documented in an appendix to *The NAEP 1992 Technical Report*. The conclusions of the study were: (1) the changes are not due to scaling procedures because the basic item data show changes that are consistent with the scale scores, (2) the changes cannot be attributed to scorer reliability differences because the data from the different assessment years are equally reliable, in the interrater sense, (3) the changes cannot be attributed to differential stringency of the raters in the various assessment years, (4) changes in demographics of the samples cannot explain the changes, and (5) collateral data tend to show the same trend as the proficiency means. One possible explanation for the eighth-grade increase between 1990 and 1992, identified in the examination of the collateral data, is that students at this level are writing more than did eighth-grade students in previous years.

As described earlier, the NAEP proficiency scales make it possible to examine relationships between students' performance and a variety of background factors measured by NAEP. The fact that a relationship exists between achievement and another variable, however, does not reveal the underlying cause of the relationship, which may be influenced by a number of other variables. Similarly, the assessments do not capture the influence of unmeasured variables. The results are most useful when they are considered in combination with other knowledge about the student population and the educational system, such as trends in instruction, changes in the school-age population, and societal demands and expectations.

The Scale Anchoring Analysis

The reading scale anchoring was conducted on the basis of the 1983-84 assessment, and the scale anchoring for mathematics and science trend reporting was based on the 1986 assessments. Scale anchoring was not used with the writing assessment. NAEP's scale anchoring is grounded in an empirical process whereby the scaled assessment results are analyzed to delineate sets of items that discriminate between adjacent performance levels on the scale. For the science, mathematics, and reading trend scales, these levels are 150, 200, 250, 300, and 350. For these five levels, items were identified that were likely to be answered correctly by students performing at a particular level on the scale and much less likely to be answered correctly by students performing at the next lower level.

The guidelines used to select such items were that students at any given level would have at least a 65 percent (but often higher) probability of success with the questions, while the students at the next lower level would have a much lower probability of success, that is, lower than 50 percent, and using the criterion that the difference in probabilities exceeded 30 percent between adjacent levels. For each of the three curriculum areas, subject-matter specialists examined these empirically selected item sets and used their professional judgment to characterize each proficiency level.

For writing, an item mapping procedure was used to portray students' writing at the various scale levels. Writing trend assessment prompts are scored on a three- or four-point scale. The result of item mapping is the identification, for each item, of the points on the NAEP writing scale at which it is estimated that 65% of students would write a response scored one or better (unsatisfactory response to topic or better), two or better (minimal response to topic or better), three or better (adequate response to topic or better), and four (elaborated response to topic). For those items having only three score points, of course, the highest category is three (adequate response to topic).

NAEP Reporting Groups

This report contains results for the nation and groups of students within the nation defined by shared characteristics. The definitions for subgroups as defined by race/ethnicity, size and type of community, parents' education level, gender, and region follow.

Race/Ethnicity. Results are presented for students of different racial/ethnic groups according to the following mutually exclusive categories: White, Black, Hispanic, Asian/Pacific Islander, and American Indian (including Alaskan Native.) Some racial/ethnic results are not reported separately because there were too few students in the classification. However, the data for all students, regardless of whether their racial/ethnic group was reported separately, were included in computing the overall national results.

Type of Community. Results are provided for four mutually exclusive community types — advantaged urban, disadvantaged urban, extreme rural, and other — as described below. According to information about parents' occupation obtained from the Principal's Questionnaire completed by an official from each sampled school, indices are developed such that for each assessment approximately the 10 percent of the most extreme advantaged urban, disadvantaged urban, and rural schools are classified into the first three categories. The remaining approximately 70 percent of the schools are classified into the "other" category.

Advantaged Urban: Students in this group reside in metropolitan statistical areas and attend schools where a high proportion of the students' parents are in professional or managerial positions.

Disadvantaged Urban. Students in this group reside in metropolitan statistical areas and attend schools where a high proportion of the students' parents are on welfare or are not regularly employed.

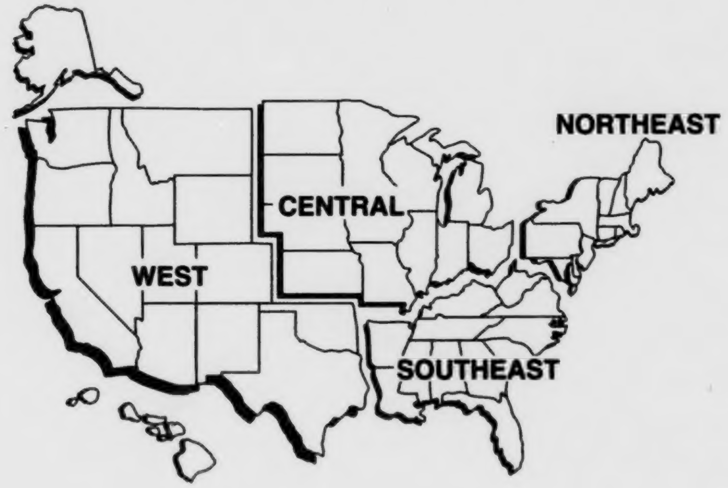
Extreme Rural: Students in this group do not reside in metropolitan statistical areas. They attend schools in areas with a population below 10,000 where many of the students' parents are farmers or farm workers.

Other. Students in the "Other" category attend schools in areas other than those defined as advantaged urban, disadvantaged urban, or extreme rural.

Parents' Education Level. Students were asked to indicate the extent of schooling for each of their parents — did not finish high school, graduated from high school, had some education after high school, or graduated from college. The response indicating the higher level of education for either parent was selected for reporting.

Gender. Results are reported separately for males and females. Gender was reported by the student.

Region. The United States has been divided into four regions: Northeast, Southeast, Central, and West. States in each region are shown on the map below. Each state except Virginia is totally in one region. That part of Virginia that is part of the Washington, D.C.-Maryland-Virginia metropolitan statistical area is included in the Northeast region; the remainder of the state is included in the Southeast region.



Estimating Variability

Because the statistics presented in this report are estimates of group and subgroup performance based on samples of students, rather than the values that could be calculated if every student in the nation answered every question, it is important to have measures of the degree of uncertainty of the estimates. In addition to providing estimates of percentages of students and their proficiency, this report also provides information about the uncertainty of each statistic.

Two components of uncertainty are accounted for in the variability of statistics based on proficiency: the uncertainty due to sampling only a relatively small number of students and the uncertainty due to sampling only a relatively small number of questions. The variability of estimates of percentages of students having certain background characteristics or answering a certain cognitive question correctly is accounted for by the first component alone. Because NAEP uses complex sampling procedures, conventional formulas for estimating sampling variability that assume simple random sampling are inappropriate and NAEP uses a jackknife replication procedure to estimate standard errors. The jackknife standard error provides a reasonable measure of uncertainty for any information about students that can be observed without error, but each student typically responds to so few items within any content area that the proficiency measurement for any single student would be imprecise. In this case, using plausible values technology makes it possible to describe the performance of groups and subgroups of students, but the underlying imprecision that makes this step necessary adds an additional component of variability to statistics based on NAEP proficiencies.[110]

The reader is reminded that, like those from all surveys, NAEP results are also subject to other kinds of errors including the effects of necessarily imperfect adjustment for student and school nonresponse and other largely unknowable effects associated with the particular instrumentation and data collection methods used. Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all selected students in all selected schools in the sample (some students or schools refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording, coding, or scoring data; and other errors of collecting, processing, sampling, and estimating missing data. The extent of nonsampling errors is difficult to estimate. By their nature, the impacts of such error cannot be reflected in the data-based estimates of uncertainty provided in NAEP reports.

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[110] For further details, see Johnson, E. G., "Considerations and Techniques for the Analysis of NAEP Data," in *Journal of Educational Statistics* (December 1989).

Drawing Inferences from the Results

The use of confidence intervals, based on the standard errors, provides a way to make inferences about the population means and proportions in a manner that reflects the uncertainty associated with the sample estimates. An estimated sample mean proficiency ± 2 standard errors represents a 95 percent confidence interval for the corresponding population quantity. This means that with approximately 95 percent certainty, the average performance of the entire population of interest is within ± 2 standard errors of the sample mean.

As an example, suppose that the average mathematics proficiency of students in a particular group was 256, with a standard error of 1.2. A 95 percent confidence interval for the population quantity would be as follows:

$$\text{Mean} \pm 2 \text{ standard errors} = 256 \pm 2\ (1.2) = 256 \pm 2.4 =$$
$$256 - 2.4 \text{ and } 256 + 2.4 = 253.6,\ 258.4$$

Thus, one can conclude with 95 percent certainty that the average proficiency for the entire population of students in that group is between 253.6 and 258.4.

Similar confidence intervals can be constructed for percentages, provided that the percentages are not extremely large (greater than 90) or extremely small (less than 10). For extreme percentages, confidence intervals constructed in the above manner may not be appropriate, and procedures for obtaining accurate confidence intervals are quite complicated.

To determine whether there is a real difference between the mean proficiency (or proportion of a certain attribute) for two groups in the population, one needs to obtain an estimate of the degree of uncertainty associated with the difference between the proficiency means or proportions of these groups for the sample. This estimate of the degree of uncertainty — called the standard error of the difference between the groups — is obtained by squaring each group's standard error, summing these squared standard errors, and then taking the square root of this sum. This procedure produces a conservative estimate of the standard error of the difference, since the estimates of the group means or proportions will be positively correlated to an unknown extent due to the sampling plan. Direct estimation of the standard errors of all reported differences would involve a heavy computational burden.

Similar to the manner in which the standard error for an individual group mean or proportion is used, the standard error of the difference can be used to help determine whether differences between assessment years are real. If one wants to hold the certainty level for a specific set of comparisons at a particular level (e.g. .95), adjustments (called multiple-comparisons procedures) need to be made. The set of comparisons is referred to as a "family" and the typical family involves all years in the assessment, even for tables in which only the first and last years' results are reported. One such procedure — the Bonferroni method — was used to form confidence intervals for the trend differences between 1992 and each previous assessment year, as well as between the first and each successive year.

Multiple-comparisons procedures are useful for controlling the overall Type I error rate for a defined set of hypothesis tests. However, especially when the number of potential comparisons which could be made is large, as in NAEP data, this protection comes at the substantial loss of power in detecting specific consistent patterns in the data. For example, more powerful and complex tests of significance designed to identify consistent patterns in the data might judge that two groups were significantly different when a Bonferroni multiple-comparisons procedure would not.

One such test of patterns in NAEP data is the test of linear and quadratic trends applied to the trend data for the nation and selected subpopulations. The linear and quadratic components of the trend in average proficiency for a given subject area and age group were estimated by applying two sets of contrasts to the set of average proficiencies by year. The linear component of the trend was estimated by the sum $b_1 = \sum c_j x_j$, where the x_j are the proficiency means by year and the c_j are defined such that b_1 corresponds to the slope of an unweighted regression of the proficiency means on the assessment year. The quadratic component was estimated by the sum $b_2 = \sum d_j x_j$, in which the d_j are formally orthogonal to the c_j and are defined such that b_2 is the quadratic term in the unweighted regression of the proficiency means on the assessment year and the square of the assessment year. The statistical significance of b_1 and b_2 was evaluated by comparing each estimate to its estimated standard error. The standard error of b_1 was estimated as the square root of the sum $\sum c_j^2 SE_j^2$, in which SE_j is the estimated standard error of x_j. The estimated standard error of the b_2 was analogously defined. The reader is cautioned that some means and standard errors in this report may differ slightly from values reported in previous trend reports because of a slight modification of procedures. The method used to round off numbers to the number of reported decimal places was modified to conform to NCES standards.

Data Appendix

Science

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1970	1973	1977	1982	1986	1990	1992	TREND TESTS
TOTAL			100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	225.0(1.2)*	220.0(1.2)*†	219.9(1.2)*†	220.8(1.8)*	224.3(1.2)*	228.7(0.8)	230.6(1.0)†	LQ
SEX								
Male			50.6(0.4)*	50.5(1.5)	50.0(0.6)	49.4(0.6)	48.6(0.6)†	
	228.0(1.3)*	222.1(1.3)*†	221.0(2.3)*†	227.3(1.4)*	230.3(1.1)*	234.7(1.2)†	LQ	
Female			49.4(0.4)*	49.5(1.5)	50.0(0.6)	50.6(0.6)	51.4(0.6)†	
	223.0 (1.2)	218.0(1.2)*†	217.6(1.2)*†	220.7(2.0)*	221.3(1.4)*	227.1(1.0)	226.7(1.0)	LQ
RACE/ETHNICITY								
White			79.6(1.6)	78.6(2.6)	76.5(1.1)	74.5(1.1)†	75.4(0.9)	
	236.0(0.9)	231.0(0.9)*†	229.6(0.9)*†	229.0(1.9)*†	231.9(1.2)*†	237.5(0.8)	239.1(1.0)	LQ
Black			13.7(1.4)	14.3(2.1)	14.9(0.5)	16.3(0.7)	15.9(0.4)	
	179.0(1.9)*	177.0(1.9)*	174.8(1.8)*	187.0(3.0)*	196.2(1.9)†	196.4(2.0)†	200.3(2.7)†	LQ
Hispanic			5.3(0.9)	5.2(1.3)	6.2(1.1)	5.5(0.6)	5.6(0.8)	
			191.9(2.7)*	189.0(4.2)*	199.4(3.1)	206.2(2.2)†	204.7(2.8)†	L
Other			1.5(0.3)*	2.0(1.0)	2.5(0.5)	3.8(1.0)	3.0(0.4)†	
			214.4(5.4)	222.8(5.3)	220.6(4.6)	227.4(3.6)	226.5(3.4)	L
REGION								
Northeast			25.3(1.5)	19.0(2.3)	21.1(1.1)	23.2(0.9)	20.9(1.2)	
	230.0(2.9)	222.0(2.9)*	224.4(1.6)*	221.8(2.9)*	228.2(3.5)	231.1(2.4)	234.4(2.8)	LQ
Southeast			20.2(1.2)	22.6(2.7)	22.5(4.7)	24.1(0.9)†	24.1(1.3)	
	206.0(1.6)*	207.0(1.6)*	205.1(2.9)*	213.9(3.6)	218.8(3.1)†	219.9(1.9)†	222.8(1.7)†	L
Central			29.5(1.9)	30.1(4.3)	28.6(4.0)	24.3(0.6)†*	28.2(0.8)	
	233.0(3.0)	228.0(3.0)*	225.2(2.2)*	226.3(3.5)*	227.9(2.2)*	234.2(1.7)	237.5(1.8)	LQ
West			25.0(2.0)	28.4(2.7)	27.7(1.6)	28.4(0.8)	26.7(0.8)	
	226.0(2.2)	221.0(2.2)	220.9(2.2)	219.9(4.1)	222.1(3.2)	229.5(1.8)	227.4(2.2)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977 (1970 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results from 1970 and 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1970 and 1973 and the Race/ Ethnicity data are available only for White and Black students for those two assessment years.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	24.1(1.0)*	30.0(1.9)†*	33.9(1.7)†	34.8(1.4)†	37.6(1.2)†	
	197.5(1.6)*	197.5(2.9)*	204.9(1.6)†*	210.9(1.5)†	214.8(1.4)†	LQ
At Modal Grade	74.8(1.0)*	69.5(1.9)*	65.8(1.7)†	64.8(1.4)†	62.1(1.2)†	
	227.0(1.2)*	230.7(2.2)*	234.3(1.2)†*	238.2(1.0)†	240.1(1.0)†	L
Above Modal Grade	0.7(0.1)*	0.5(0.2)	0.3(0.1)†	0.3(0.1)†	0.3(0.1)†	
	243.9(6.2)	265.9(13.1)	235.0(10.7)	234.8(9.6)	247.6(16.2)	N
TYPE OF COMMUNITY						
Extreme Rural	8.5(2.0)	12.0(4.6)	4.8(2.2)	7.5(1.6)	9.5(2.9)	
	224.5(3.2)	212.4(5.3)*	224.0(4.4)	233.0(4.3)	227.6(2.6)	L
Disadvantaged Urban	7.5(1.6)	6.4(1.8)	6.0(1.6)	8.8(2.5)	8.2(1.7)	
	180.5(3.4)*	192.2(5.7)	191.6(3.8)	208.5(5.9)†	201.6(3.5)†	L
Advantaged Urban	10.4(2.0)	10.7(2.1)	16.8(3.1)	11.8(2.2)	10.8(2.1)	
	242.0(2.2)*	243.2(4.3)	243.1(2.4)*	241.2(1.6)*	252.3(2.4)†	L
Other	73.5(3.3)	70.9(4.8)	72.5(4.1)	71.9(4.0)	71.5(3.9)	
	220.2(1.4)*	221.5(2.1)*	222.7(1.7)*	228.6(1.2)†	231.0(1.0)†	LQ
PARENTS' EDUCATION LEVEL						
Less than H.S.	9.0(0.4)*	6.5(0.9)	4.2(0.4)†	4.9(0.4)†	4.2(0.3)†	
	198.5(2.2)*	198.2(6.0)*	203.6(2.9)*	209.8(2.7)†	217.2(2.6)†	L
Graduated H.S.	26.7(0.5)*	14.7(1.1)†	16.4(0.7)†*	16.0(0.7)†*	13.5(0.7)†	
	223.0(1.4)	218.0(3.3)	219.6(1.5)	225.8(1.7)	222.0(1.9)	N
Some Educ After H.S.	7.2(0.3)	8.3(0.6)	6.6(0.6)	7.4(0.4)	7.8(0.4)	
	237.2(1.5)	229.1(3.2)	235.8(2.6)	237.6(2.1)	236.6(2.4)	N
Graduated College	23.1(0.7)*	42.0(2.3)†	37.8(1.1)†	40.1(1.1)†	41.5(1.2)†	
	232.3(1.4)*	230.5(2.3)*	235.2(1.4)	236.2(1.3)	238.9(1.2)†	L
Unknown	34.0(0.7)	28.5(1.8)†	34.9(1.0)	31.7(0.8)	33.0(0.8)	
	211.0(1.4)*	210.8(2.8)*	215.3(1.5)*	221.5(1.2)†	224.2(1.4)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	88.8(1.2)	90.4(2.3)	83.9(2.7)	88.9(2.1)	86.6(1.6)	
	218.0(1.4)*	219.7(2.0)*	222.6(1.4)*	227.7(0.9)†	229.1(1.0)†	L
Non-Public	11.2(1.2)	9.6(2.3)	16.1(2.7)	11.1(2.1)	13.4(1.6)	
	234.6(2.2)	231.5(3.2)	233.0(2.9)	236.8(2.4)	240.2(2.7)	N
QUARTILES						
Upper	25.0(0.8)	25.0(1.7)	25.0(0.9)	24.9(0.8)	25.1(0.8)	
	265.6(0.9)*	268.3(1.8)	268.8(1.2)	271.0(0.8)†	272.7(1.2)†	L
Middle Two	50.0(0.8)	50.1(1.5)	49.9(0.9)	50.2(0.9)	50.0(0.8)	
	222.1(0.5)*	221.7(1.1)*	225.8(0.6)†*	231.0(0.5)†	232.5(0.7)†	LQ
Lower	25.0(1.2)	24.9(1.5)	25.0(1.3)	25.0(0.9)	24.9(0.9)	
	169.6(1.1)*	171.4(2.0)*	176.7(1.0)†*	181.9(0.9)†	184.4(1.2)†	L

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1970	1973	1977	1982	1986	1990	1992	TREND TESTS
TOTAL			100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	255.0(1.1)	250.0(1.1)*†	247.4(1.1)*†	250.1(1.3)*†	251.4(1.4)*	255.2(0.9)	258.0(0.8)	LQ
SEX								
Male			49.8(0.3)	48.5(0.7)	49.8(0.9)	49.8(0.6)	49.9(0.8)	
	257.0(1.3)	252.0(1.3)*†	251.1(1.3)*†	255.6(1.5)	256.1(1.6)	258.5(1.1)	260.1(1.2)	LQ
Female			50.2(0.3)	51.5(0.7)	50.2(0.9)	50.2(0.6)	50.1(0.8)	
	253.0(1.2)	247.0(1.2)*†	243.7(1.2)*†	245.0(1.3)*†	246.9(1.5)*†	251.8(1.1)*	256.0(1.0)	LQ
RACE/ETHNICITY								
White			80.4(1.6)*	79.2(2.1)	76.8(1.0)	73.4(0.7)†	74.2(0.5)†	
	263.0(0.8)*	259.0(0.8)*†	256.1(0.8)*†	257.3(1.1)*†	259.2(1.4)*	264.1(0.9)	267.1(1.0)†	LQ
Black			13.0(1.2)	13.8(1.9)	14.4(0.9)	15.6(0.3)	15.9(0.3)	
	215.0(2.4)	205.0(2.4)*†	208.1(2.4)*	217.1(1.3)	221.6(2.5)	225.7(3.1)†	224.4(2.7)	LQ
Hispanic			5.0(1.1)	5.3(1.0)	6.6(1.1)	7.3(0.5)	7.0(0.5)	
			213.4(1.9)*	225.5(3.9)†*	226.1(3.1)†*	231.6(2.6)†	237.5(2.6)†	L
Other			1.6(0.4)*	1.7(0.7)	2.2(0.3)	3.7(0.8)	2.9(0.3)†	
			235.0(3.3)*	262.4(5.9)†	253.0(4.0)†	248.2(10.9)	260.7(2.7)†	LQ
REGION								
Northeast			25.6(1.5)*	24.0(2.9)	22.4(1.6)	24.3(1.0)*	20.9(0.8)†	
	261.0(2.2)	256.0(2.2)	255.2(2.3)	254.1(2.1)	257.6(3.1)	256.8(2.7)	256.8(2.2)	N
Southeast			21.3(1.1)	22.2(2.3)	24.7(5.8)	23.1(0.8)	23.9(1.6)	
	239.0(2.4)*	237.0(2.4)*	235.5(1.8)*	238.7(2.3)*	247.1(2.2)	251.3(1.9)†	254.2(2.8)†	LQ
Central			27.4(1.9)	27.9(3.9)	24.9(5.0)	23.5(0.7)	26.6(1.0)	
	262.0(1.8)	256.0(1.8)	253.8(1.8)*†	253.8(2.6)	249.4(5.3)	260.4(2.8)	262.5(2.1)	Q
West			25.7(2.1)	25.9(2.5)	28.0(1.5)	29.1(0.9)	28.6(0.9)	
	255.0(1.8)	248.0(1.8)*†	243.0(2.3)*†	252.4(2.8)	252.3(2.7)	252.6(2.1)	258.0(1.6)	LQ

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977 (1970 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results from 1970 and 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1970 and 1973 and the Race/ Ethnicity data are available only for White and Black students for those two assessment years.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	27.2(0.9)*	28.0(1.3)*	32.7(2.1)	36.1(1.3)†	37.4(1.1)†	
	223.4(1.6)*	228.6(1.6)*	234.2(1.9)†*	239.5(1.6)†	244.3(1.4)†	L
At Modal Grade	71.6(0.7)*	71.7(1.3)*	66.8(2.1)	63.4(1.4)†	62.4(1.0)†	
	255.9(1.0)*	258.5(1.3)*	259.8(1.3)*	264.0(1.0)†	266.1(1.0)†	L
Above Modal Grade	1.1(0.4)	0.2(0.1)	0.5(0.1)	0.5(0.2)	0.2(0.1)	
	284.7(3.9)	287.4(8.2)	266.4(6.3)*	262.5(17.5)	312.8(14.9)	Q
TYPE OF COMMUNITY						
Extreme Rural	9.8(2.3)	10.5(2.5)	6.0(3.5)	9.8(2.4)	9.2(2.2)	
	244.8(3.2)*	244.9(3.7)*	257.5(3.0)†	249.3(4.0)*	262.3(3.4)†	L
Disadvantaged Urban	6.5(1.3)	8.1(1.6)	8.9(4.3)	11.0(2.0)	9.7(1.5)	
	215.7(2.8)	222.3(3.5)	222.7(3.9)	226.6(4.6)	224.5(3.5)	L
Advantaged Urban	12.7(2.7)	8.8(3.1)	11.5(3.5)	9.7(1.9)	10.2(2.3)	
	267.9(1.3)	276.3(2.1)†	267.2(3.8)	268.3(1.8)	274.6(3.0)	N
Other	71.0(3.9)	72.6(4.2)	73.7(6.3)	69.5(3.4)	70.8(3.0)	
	247.0(1.1)*	250.8(1.0)†*	251.9(1.2)†*	258.7(1.3)†	259.7(1.1)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	12.7(0.7)*	9.7(0.6)†*	7.9(1.1)†	7.6(0.5)†	5.9(0.5)†	
	223.5(1.3)*	225.3(1.9)	229.4(2.7)	232.9(2.1)†	233.8(2.9)†	L
Graduated H.S.	32.8(0.6)*	25.6(1.1)†	31.0(1.3)*	26.8(0.8)†*	23.1(0.9)†	
	245.3(1.1)	243.1(1.3)	244.8(1.4)	247.3(1.3)	246.4(1.4)	N
Some Educ After H.S.	15.0(0.5)*	16.8(0.6)	15.6(0.6)*	16.8(0.6)	18.4(0.7)†	
	260.3(1.3)*	258.8(1.5)*	257.8(1.4)*	262.8(1.2)	265.9(1.1)†	LQ
Graduated College	26.6(1.0)*	37.3(1.5)†*	37.5(2.0)†*	40.8(1.2)†	44.1(1.3)†	
	266.4(1.0)	263.5(1.5)*	264.4(1.9)	267.5(1.1)	269.2(1.0)	LQ
Unknown	12.9(1.1)*	10.5(1.2)	8.0(0.4)†	7.9(0.5)†	8.4(0.4)†	
	221.9(1.8)*	229.1(2.8)	226.5(2.7)	224.3(2.1)*	231.6(2.0)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	90.4(1.4)	89.4(1.7)	95.9(1.8)*	89.6(1.4)	88.1(1.9)	
	245.2(1.2)*	248.5(1.4)*	250.9(1.4)†*	253.6(1.1)†	257.2(1.0)†	L
Non-Public	9.6(1.4)	10.6(1.7)	4.1(1.8)*	10.4(1.4)	11.9(1.9)	
	267.7(2.1)	263.7(3.2)	263.1(6.4)	269.0(1.8)	264.5(2.4)	N
QUARTILES						
Upper	25.0(1.0)	25.0(1.4)	25.0(1.2)	25.0(1.0)	25.0(1.0)	
	290.5(0.5)*	290.5(0.9)*	292.1(1.1)*	297.1(0.7)†	298.1(1.0)†	LQ
Middle Two	50.0(0.6)	50.0(1.0)	50.0(0.9)	49.9(0.9)	49.9(0.8)	
	249.0(0.6)*	251.1(0.6)*	252.3(0.7)†*	256.2(0.6)†*	260.1(0.5)†	LQ
Lower	25.0(1.2)	25.0(1.4)	25.0(1.4)	25.0(0.9)	25.0(0.8)	
	201.1(0.8)*	208.1(0.8)†*	209.2(0.9)†*	211.2(1.2)†	213.9(0.8)†	L

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1970	1973	1977	1982	1986	1990	1992	TREND TESTS
TOTAL			100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	305.0(1.0)*	296.0(1.0)†	289.5(1.0)*†	283.3(1.2)†*	288.5(1.4)*†	290.4(1.1)†	294.1(1.3)†	LQ
SEX								
Male			49.5(0.7)	48.4(0.7)	49.0(1.2)	48.6(0.9)	50.7(1.2)	
	314.0(1.2)*	304.0(1.2)†	297.0(1.2)†	291.9(1.4)†*	294.9(1.9)†	295.6(1.3)†	299.1(1.7)†	LQ
Female			50.5(0.7)	51.6(0.7)	51.0(1.2)	51.4(0.9)	49.3(1.2)	
	297.0(1.1)*	288.0(1.1)†	282.2(1.1)*†	275.2(1.3)†*	282.3(1.5)*†	285.4(1.6)†	289.0(1.5)†	LQ
RACE/ETHNICITY								
White			83.4(1.3)*	80.7(2.0)*	77.6(0.5)†*	73.3(0.5)†	74.6(0.5)†	
	312.0(0.8)*	304.0(0.8)†	297.7(0.7)*†	293.1(1.0)†*	297.5(1.7)*†	300.9(1.1)†	304.2(1.3)†	LQ
Black			11.6(1.1)*	12.5(1.4)	14.3(0.3)†	15.6(0.3)†	14.8(0.3)†	
	258.0(1.5)	250.0(1.5)†	240.2(1.5)*†	234.7(1.7)*†	252.8(2.9)	253.0(4.5)	256.2(3.2)	Q
Hispanic			3.7(0.9)*	4.5(1.1)	5.5(0.3)*	6.9(0.4)†	7.4(0.5)†	
			262.3(2.2)	248.7(2.3)†*	259.3(3.8)	261.5(4.4)	270.2(5.6)	LQ
Other			1.4(0.2)*	2.2(0.7)	2.6(0.4)†	4.2(0.5)†	3.1(0.2)†	
			284.4(4.0)	269.1(5.2)*	276.8(11.2)	292.0(5.6)	288.4(4.8)	N
REGION								
Northeast			24.1(1.7)	24.8(3.0)	23.7(0.8)	22.1(1.0)	21.6(0.9)	
	308.0(2.5)	298.0(2.5)†	296.3(2.2)†	284.4(2.0)†*	292.2(4.3)†	292.6(3.2)†	300.1(2.4)	LQ
Southeast			18.4(1.0)*	21.1(2.4)	22.9(2.3)	24.3(0.9)†	24.6(1.4)†	
	287.0(2.3)	283.0(2.3)	276.4(1.9)†	276.3(2.7)†	283.5(2.0)	283.6(2.4)	283.0(2.5)	Q
Central			33.4(1.6)*	29.5(3.9)	27.7(2.2)	25.9(0.9)†	25.0(1.0)†	
	308.0(1.9)	300.0(1.9)†	294.0(1.5)*†	289.3(2.6)*†	294.4(2.3)*†	299.6(3.0)	304.2(2.7)	Q
West			24.1(1.9)	24.6(2.6)	25.7(0.9)	27.7(0.9)	28.9(0.9)	
	308.0(1.7)*	295.0(1.7)†	286.5(1.5)†	280.9(2.7)†	283.2(3.8)†	285.8(2.3)†	290.4(3.8)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977 (1970 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results from 1970 and 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1970 and 1973 and the Race/Ethnicity data are available only for White and Black students for those two assessment years.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	14.4(0.6)*	15.5(1.0)*	16.8(0.9)*	21.7(1.0)†	23.9(1.1)†	
	253.2(1.4)*	250.8(2.2)*	259.2(2.7)	260.5(2.0)†	262.9(2.6)†	N
At Modal Grade	74.9(0.6)*	75.1(1.0)*	75.3(1.2)*	70.2(1.0)†	70.1(1.0)†	
	294.9(0.9)*	288.8(1.1)†*	294.0(1.6)*	298.7(1.0)†*	303.8(1.2)†	LQ
Above Modal Grade	10.7(0.5)*	9.4(0.7)*	7.9(0.7)†	8.1(0.6)†*	6.1(0.5)†	
	300.7(1.5)	292.5(2.6)†	298.6(4.3)	298.3(2.5)	304.7(4.1)	Q
TYPE OF COMMUNITY						
Extreme Rural	7.2(1.4)	8.3(1.7)	3.1(1.2)*	11.5(1.7)	10.6(2.2)	
	289.0(2.6)	283.3(3.3)*	296.2(6.7)	293.9(3.5)	295.3(2.6)	L
Disadvantaged Urban	7.8(1.5)	8.4(1.8)	6.3(1.1)	9.3(2.0)	11.6(1.8)	
	256.3(3.1)	249.6(5.5)	241.1(4.0)†*	254.0(7.2)	262.7(4.6)	Q
Advantaged Urban	11.6(2.5)	9.5(1.9)	12.7(2.5)	10.5(1.7)	10.3(1.8)	
	304.2(3.2)	304.5(2.1)	302.0(7.1)	304.9(4.3)	298.4(5.3)	N
Other	73.4(3.2)	73.9(3.0)	78.0(3.5)	68.6(3.1)	67.5(3.3)	
	290.8(1.0)*	284.4(1.5)†*	289.8(1.6)*	292.5(1.4)*	298.7(1.8)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	15.2(0.9)*	12.8(0.7)*	8.3(0.4)†	7.9(0.6)†	8.1(0.6)†	
	265.3(1.3)	258.5(2.4)	257.5(3.1)	261.4(2.8)	262.0(3.8)	Q
Graduated H.S.	33.1(0.6)*	28.7(0.9)†*	27.9(1.1)†*	26.4(1.1)†*	21.4(0.9)†	
	284.4(0.8)	275.2(1.6)†	277.0(2.0)†	276.3(1.4)†	280.2(2.4)	LQ
Some Educ After H.S.	17.0(0.4)*	21.5(0.6)†*	24.1(1.0)†	23.8(0.9)†	25.4(0.9)†	
	295.6(1.1)	290.1(1.7)†	295.1(2.5)	296.5(1.6)	295.9(1.7)	N
Graduated College	30.2(1.2)*	32.4(1.4)*	36.9(1.2)†*	38.9(1.4)†	42.6(1.4)†	
	309.3(1.0)	300.2(1.7)†*	303.8(2.1)	305.5(1.7)	308.3(1.3)	Q
Unknown	4.4(0.4)*	4.7(0.8)*	2.8(0.3)†	3.0(0.4)†	2.5(0.3)†	
	252.6(3.2)	251.6(3.9)	245.4(5.5)	248.2(5.5)	257.6(7.4)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1977	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	93.6(1.8)	90.1(2.0)	96.0(1.4)	92.8(1.8)	90.2(2.4)	
	288.2(1.0)	282.3(1.1)†*	287.1(1.6)	289.0(1.1)	292.2(1.3)	LQ
Non-Public	6.4(1.8)	9.9(2.0)	4.0(1.4)	7.2(1.8)	8.6(2.1)	
	308.4(2.4)	292.0(2.9)†*	321.3(10.1)	307.8(6.6)	311.7(3.7)	N
QUARTILES						
Upper	25.0(0.8)	24.9(0.9)	25.0(1.3)	25.0(0.9)	24.9(1.1)	
	333.6(0.9)*	328.9(1.0)†*	339.9(1.1)†*	344.3(0.7)†	346.4(0.7)†	LQ
Middle Two	50.0(0.5)	50.1(1.1)	50.0(1.2)	50.1(0.8)	50.1(1.0)	
	291.2(0.5)*	286.1(0.7)†*	289.6(0.7)*	291.6(0.7)*	295.3(1.0)†	LQ
Lower	25.0(0.9)	25.0(1.3)	25.0(1.6)	25.0(1.0)	25.0(1.0)	
	242.0(0.8)	232.1(1.3)†*	234.7(1.3)†	234.0(1.2)†*	239.6(1.9)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 150

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	93.5(0.6)*	95.2(0.7)*	96.2(0.3)†*	97.0(0.3)†	97.4(0.3)†	L
SEX						
Male	94.3(0.5)*	95.0(1.0)*	96.8(0.5)†	96.8(0.5)†	97.7(0.3)†	L
Female	92.8(0.7)*	95.5(1.2)	95.6(0.6)†	97.1(0.4)†	97.1(0.5)†	L
RACE/ETHNICITY						
White	97.7(0.3)*	98.3(0.4)	98.2(0.3)*	99.2(0.2)†	99.2(0.1)†	L
Black	72.4(1.8)*	82.1(3.0)†	88.6(1.4)†	88.0(1.3)†	90.7(1.8)†	LQ
Hispanic	84.6(1.8)*	85.1(3.1)	89.6(2.4)	93.6(1.5)†	92.4(1.7)†	L
Other	94.9(2.4)	95.7(3.2)	95.9(1.8)	96.3(2.6)	96.3(1.8)	N
GRADE						
Below Modal Grade	86.2(1.1)*	88.5(1.9)*	91.8(0.8)†*	93.2(0.9)†	94.5(0.7)†	L
At Modal Grade	95.9(0.6)*	98.1(0.6)†	98.5(0.3)†	99.0(0.3)†	99.2(0.2)†	LQ
Above Modal Grade	96.4(2.2)	100.0(2.2)	98.5(2.2)	100.0(0.0)	99.0(2.2)	N
REGION						
Northeast	94.6(0.7)*	94.5(1.4)	96.7(0.9)	97.1(0.6)†	97.9(0.9)†	L
Southeast	87.8(1.8)*	92.7(1.6)	95.0(1.2)†	94.6(0.9)†	95.6(0.5)†	L
Central	95.5(0.8)*	97.5(1.1)	97.1(0.6)	98.4(0.7)†	98.7(0.5)†	L
West	94.9(1.1)	95.4(1.3)	95.9(0.7)	97.7(0.7)	97.3(0.5)	L
TYPE OF COMMUNITY						
Extreme Rural	96.6(0.9)	94.3(2.6)	97.0(1.8)	97.6(1.8)	97.6(0.8)	N
Disadvantaged Urban	74.9(2.4)*	85.2(4.3)	86.3(2.0)†	92.2(2.3)†	90.0(2.2)†	L
Advantaged Urban	98.9(0.4)	99.7(0.4)	99.3(0.4)	99.6(0.3)	99.8(0.3)	N
Other	94.3(0.6)*	95.6(0.7)*	96.3(0.5)*	97.0(0.4)†	97.9(0.4)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	86.0(1.7)*	85.5(3.5)*	90.1(3.4)	93.3(2.3)†	96.0(1.5)†	L
Graduated H.S.	95.0(0.5)	96.1(1.0)	95.6(0.6)	96.9(0.8)	95.2(0.7)	N
Some Educ After H.S.	97.1(0.9)	96.6(1.8)	98.0(1.1)	97.6(1.2)	97.6(1.0)	N
Graduated College	96.8(0.6)	97.2(0.7)	98.0(0.4)	98.1(0.4)	98.5(0.5)	L
Unkown	91.4(0.8)*	93.8(1.9)	95.0(0.6)†*	96.0(0.6)†	97.1(0.5)†	L
TYPE OF SCHOOL						
Public	93.0(0.7)*	94.9(0.8)*	95.8(0.4)†	96.7(0.4)†	97.1(0.4)†	L
Non-Public	98.1(0.6)	98.9(1.4)	98.2(0.7)	98.7(0.9)	99.2(0.6)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.5(0.1)*	100.0(0.1)†	99.8(0.1)	100.0(0.0)†	100.0(0.0)†	L
Lower	75.2(1.4)*	81.0(2.5)*	85.2(1.1)†*	87.9(1.2)†	89.6(1.3)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 200

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	68.0(1.1)*	70.7(1.9)*	72.0(1.1)†*	76.4(0.9)†	78.0(1.2)†	L
SEX						
Male	69.5(1.2)*	69.7(2.0)*	74.1(1.4)†*	76.3(1.2)†	80.4(1.4)†	L
Female	66.5(1.1)*	71.8(2.2)	70.0(1.3)*	76.4(1.1)†	75.7(1.2)†	L
RACE/ETHNICITY						
White	76.8(0.7)*	78.4(2.0)*	78.9(1.0)*	84.4(0.7)†	85.5(0.9)†	L
Black	27.2(1.5)*	38.9(2.7)†*	46.2(2.3)†	46.4(3.1)†	51.3(3.5)†	L
Hispanic	42.0(3.1)*	40.2(6.1)	50.1(3.7)	56.3(3.7)†	55.5(4.3)†	L
Other	62.0(6.9)	77.0(5.6)	67.4(4.1)	76.3(7.0)	73.2(3.7)	N
GRADE						
Below Modal Grade	48.8(1.8)*	50.1(3.3)*	55.1(1.7)†*	61.1(2.1)†	64.5(1.6)†	L
At Modal Grade	74.2(1.1)*	79.6(1.9)*	80.7(0.9)†*	84.5(1.0)†	86.1(1.3)†	L
Above Modal Grade	83.0(4.1)	95.6(8.8)	77.5(9.8)	84.7(12.1)	86.3(11.1)	N
REGION						
Northeast	72.6(1.6)*	71.5(3.5)	75.6(2.5)	78.2(2.3)	80.6(2.2)†	L
Southeast	55.0(2.4)*	63.0(3.6)	67.3(3.0)†	68.4(2.4)†	71.4(2.4)†	L
Central	72.5(2.1)*	75.4(3.7)	75.2(2.1)*	81.9(1.3)†	83.7(1.4)†	L
West	68.5(2.3)	71.4(3.8)	69.9(3.0)	76.8(2.1)†	75.9(2.7)	L
TYPE OF COMMUNITY						
Extreme Rural	72.6(3.1)	66.0(5.1)	73.4(3.8)	81.6(3.6)	77.2(3.5)	L
Disadvantaged Urban	33.5(3.2)*	42.5(7.4)	41.0(5.8)	56.5(6.7)†	51.8(4.6)†	L
Advantaged Urban	85.5(1.7)*	88.3(4.0)	86.9(1.8)*	87.6(1.7)	92.8(1.2)†	L
Other	68.5(1.3)*	71.4(2.3)*	71.0(1.4)*	76.4(1.1)†	78.8(1.0)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	49.8(2.4)*	54.9(8.7)	55.1(3.6)*	60.5(4.2)	68.5(3.2)†	L
Graduated H.S.	71.2(1.4)	68.2(4.3)	69.1(1.9)	75.2(2.1)	71.2(2.0)	N
Some Educ After H.S.	81.9(1.5)	80.7(2.4)	80.2(1.9)	81.3(2.3)	82.1(1.9)	N
Graduated College	77.7(1.2)*	78.8(2.0)	80.4(1.2)	81.9(1.2)	84.3(1.3)†	L
Unknown	60.8(1.5)*	60.9(3.6)*	65.0(2.0)*	71.3(1.4)†	73.2(1.8)†	L
TYPE OF SCHOOL						
Public	66.4(1.3)*	69.5(2.1)*	70.5(1.3)*	75.5(1.0)†	76.7(1.3)†	L
Non-Public	80.3(1.7)	82.6(3.5)	79.7(2.3)	83.6(2.4)	86.2(2.0)	N
QUARTILES						
Upper	99.0(0.3)	100.0(0.0)	99.7(0.2)	99.9(0.1)	99.9(0.1)†	L
Middle Two	78.4(0.6)*	85.6(1.9)†*	84.9(1.1)†*	90.0(0.8)†	91.3(1.0)†	L
Lower	16.2(1.1)*	11.6(2.0)*	18.6(1.6)*	25.6(2.0)†	29.2(2.3)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 250

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	25.7(0.7)*	24.3(1.8)*	27.5(1.4)*	31.1(0.8)†	32.8(1.0)†	LQ
SEX						
Male	27.4(0.9)*	25.6(2.6)*	29.9(2.0)*	33.1(1.1)†	37.2(1.7)†	LQ
Female	24.0(0.9)*	23.0(2.0)	25.1(1.4)	29.1(1.0)†	28.6(1.1)†	L
RACE/ETHNICITY						
White	30.8(0.7)*	29.4(2.1)*	32.7(1.5)*	37.5(1.1)†	39.4(1.1)†	LQ
Black	3.5(0.6)*	3.9(1.3)*	8.3(1.5)†	8.5(1.1)†	9.2(1.4)†	L
Hispanic	8.8(1.7)	4.2(2.7)	10.7(2.4)	11.6(2.1)	11.7(1.8)	L
Other	20.5(4.9)	23.4(11.1)	27.1(5.8)	30.1(6.0)	30.4(4.7)	N
GRADE						
Below Modal Grade	11.0(0.9)*	8.4(1.7)*	13.0(1.3)*	16.5(1.2)†	20.0(1.6)†	LQ
At Modal Grade	30.3(0.9)*	31.0(2.5)*	35.0(1.7)*	39.0(1.1)†	40.4(1.0)†	L
Above Modal Grade	45.7(7.0)	60.5(16.3)	32.8(13.1)	26.9(16.3)	55.7(18.3)	N
REGION						
Northeast	28.9(1.1)	25.8(3.1)	30.5(2.9)	33.4(2.9)	35.9(2.7)	L
Southeast	17.2(1.5)*	20.2(3.6)	23.3(3.0)	24.9(1.4)†	26.5(1.8)†	L
Central	29.2(1.6)*	27.5(3.6)*	30.1(2.3)*	34.4(1.8)	38.7(2.3)†	L
West	25.3(1.2)	23.1(4.6)	26.2(2.6)	31.7(1.7)†	29.8(2.2)	L
TYPE OF COMMUNITY						
Extreme Rural	26.4(2.8)	18.3(5.6)	25.9(5.8)	33.8(4.3)	28.3(3.0)	N
Disadvantaged Urban	6.1(1.2)*	7.9(4.7)	7.3(2.2)	16.9(3.7)†	11.5(1.7)†	L
Advantaged Urban	42.7(2.6)	42.8(5.0)	43.3(3.3)	40.5(3.0)*	53.5(3.4)	N
Other	25.2(0.9)*	24.0(2.5)*	25.7(1.6)*	31.0(1.2)†	32.7(1.0)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	12.7(1.3)	8.6(4.0)	12.7(2.7)	16.3(3.5)	19.6(2.8)	L
Graduated H.S.	27.0(1.2)	20.3(3.1)	23.1(1.8)	27.3(1.8)	26.2(1.7)	Q
Some Educ After H.S.	39.4(1.5)	31.9(5.1)	38.5(3.7)	40.7(2.5)	39.2(3.1)	N
Graduated College	35.1(1.2)*	32.2(2.7)*	36.8(1.8)	38.3(1.2)	40.2(1.4)†	L
Unknown	18.9(0.8)*	16.1(2.1)*	19.5(1.7)*	23.9(1.3)†	26.5(1.7)†	LQ
TYPE OF SCHOOL						
Public	24.5(0.9)*	23.9(2.1)*	26.3(1.5)*	30.3(0.8)†	31.5(1.0)†	L
Non-Public	35.6(1.9)	28.2(5.6)	33.8(2.8)	37.2(3.0)	40.6(3.4)	N
QUARTILES						
Upper	70.1(1.1)*	79.1(3.0)†	76.1(2.0)†*	80.2(1.5)†	82.7(1.6)†	L
Middle Two	16.2(0.6)*	9.1(1.9)†*	16.9(1.5)*	22.1(1.0)†	23.9(1.3)†	LQ
Lower	0.2(0.1)	0.0(0.1)	0.2(0.2)	0.2(0.1)	0.4(0.2)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 300

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	3.2(0.3)	2.3(0.7)	3.0(0.5)	3.1(0.3)	3.4(0.3)	N
SEX						
Male	3.7(0.3)	2.5(1.0)	3.8(0.6)	4.2(0.6)	4.6(0.6)	N
Female	2.6(0.3)	2.1(0.6)	2.2(0.5)	2.0(0.3)	2.2(0.3)	N
RACE/ETHNICITY						
White	3.9(0.3)	2.9(0.9)	3.8(0.6)	3.9(0.4)	4.3(0.4)	N
Black	0.2(0.1)	0.1(0.4)	0.3(0.2)	0.1(0.2)	0.3(0.3)	N
Hispanic	0.3(0.4)	0.0(0.0)	0.2(0.2)	0.4(0.4)	0.4(0.4)	N
Other	1.9(1.0)	0.0(0.0)	2.1(1.1)	3.2(1.5)	3.2(1.5)	N
GRADE						
Below Modal Grade	0.7(0.1)	0.1(0.2)*	0.6(0.2)	0.9(0.4)	1.2(0.3)	LQ
At Modal Grade	3.9(0.4)	3.0(0.9)	4.2(0.7)	4.3(0.5)	4.7(0.4)	N
Above Modal Grade	9.7(5.1)	29.7(17.8)	7.2(5.8)	4.7(7.3)	7.2(8.1)	N
REGION						
Northeast	3.6(0.4)	2.6(1.2)	3.7(1.9)	3.4(0.7)	4.1(0.8)	N
Southeast	1.6(0.3)	1.4(0.5)	2.3(0.4)	2.2(0.7)	2.5(0.7)	N
Central	3.8(0.5)	2.9(1.5)	3.2(0.8)	3.8(0.8)	4.4(0.6)	N
West	3.2(0.5)	2.1(1.5)	2.7(0.9)	3.0(0.5)	2.6(0.5)	N
TYPE OF COMMUNITY						
Extreme Rural	2.9(0.8)	0.4(0.6)	2.0(0.9)	3.3(1.2)	2.4(0.8)	N
Disadvantaged Urban	0.4(0.3)	0.4(0.6)	0.2(0.6)	1.5(1.0)	0.4(0.3)	N
Advantaged Urban	7.3(1.3)	5.5(2.2)	6.7(1.0)	4.4(0.9)	8.8(1.7)	N
Other	2.9(0.3)	2.3(0.8)	2.4(0.6)	3.0(0.3)	3.0(0.3)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.9(0.4)	0.2(0.4)	0.8(0.9)	0.5(0.5)	1.7(1.0)	N
Graduated H.S.	3.2(0.3)	1.8(1.4)	1.6(0.5)†	2.0(0.6)	1.8(0.6)	N
Some Educ After H.S.	5.7(1.0)	2.4(1.8)	4.4(1.4)	5.4(1.3)	4.8(1.5)	N
Graduated College	5.4(0.7)	3.7(1.1)	5.0(1.0)	4.5(0.6)	5.0(0.6)	N
Unknown	1.7(0.4)	0.8(0.5)	1.4(0.4)	1.6(0.5)	1.9(0.4)	N
TYPE OF SCHOOL						
Public	2.9(0.3)	2.3(0.7)	2.8(0.6)	3.0(0.4)	3.2(0.3)	N
Non-Public	5.1(1.1)	2.1(1.2)	4.0(0.7)	3.9(1.0)	4.6(1.3)	N
QUARTILES						
Upper	12.0(0.9)	9.1(2.3)	11.7(1.7)	12.1(1.3)	13.2(1.1)	N
Middle Two	0.3(0.1)	0.0(0.1)	0.1(0.1)	0.2(0.1)	0.2(0.1)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 350

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	0.1(0.0)	0.0(0.1)	0.1(0.1)	0.1(0.0)	0.1(0.1)	N
SEX						
Male	0.1(0.0)	0.1(0.2)	0.1(0.1)	0.1(0.1)	0.1(0.1)	N
Female	0.1(0.0)	0.0(0.1)	0.1(0.1)	0.0(0.0)	0.0(0.0)	N
RACE/ETHNICITY						
White	0.1(0.0)	0.1(0.1)	0.1(0.1)	0.1(0.1)	0.1(0.1)	N
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Hispanic	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.1(0.0)	0.0(0.0)	N
GRADE						
Below Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
At Modal Grade	0.1(0.0)	0.1(0.1)	0.2(0.1)	0.1(0.1)	0.1(0.1)	N
Above Modal Grade	0.9(1.3)	0.0(1.3)	0.0(1.3)	0.0(1.3)	0.0(1.3)	N
REGION						
Northeast	0.1(0.1)	0.0(0.1)	0.2(0.3)	0.0(0.3)	0.1(0.2)	N
Southeast	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.1(0.1)	0.0(0.1)	N
Central	0.1(0.1)	0.0(0.3)	0.1(0.1)	0.1(0.1)	0.2(0.2)	N
West	0.0(0.1)	0.1(0.1)	0.1(0.1)	0.1(0.1)	0.0(0.1)	N
TYPE OF COMMUNITY						
Extreme Rural	0.0(0.0)	0.0(0.0)	0.2(0.7)	0.0(0.7)	0.1(0.7)	N
Disadvantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Advantaged Urban	0.2(0.2)	0.1(0.2)	0.3(0.2)	0.0(0.1)	0.3(0.3)	N
Other	0.1(0.0)	0.0(0.1)	0.1(0.1)	0.1(0.0)	0.0(0.0)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.0)	N
Graduated H.S.	0.1(0.1)	0.0(0.1)	0.0(0.2)	0.0(0.2)	0.0(0.2)	N
Some Educ After H.S.	0.1(0.1)	0.0(0.1)	0.1(0.1)	0.1(0.1)	0.1(0.1)	N
Graduated College	0.1(0.1)	0.1(0.2)	0.2(0.2)	0.1(0.1)	0.1(0.1)	N
Unknown	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
TYPE OF SCHOOL						
Public	0.0(0.0)	0.1(0.1)	0.1(0.1)	0.1(0.0)	0.1(0.0)	N
Non-Public	0.2(0.2)	0.0(0.2)	0.2(0.2)	0.1(0.2)	0.1(0.2)	N
QUARTILES						
Upper	0.2(0.1)	0.2(0.3)	0.4(0.3)	0.2(0.1)	0.3(0.2)	N
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 150

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	98.5(0.2)*	99.5(0.1)†	99.7(0.1)†	99.7(0.1)†	99.6(0.1)†	LQ
SEX						
Male	98.8(0.2)*	99.7(0.1)†	99.8(0.1)†	99.7(0.1)†	99.6(0.2)†	LQ
Female	98.2(0.2)*	99.2(0.2)†	99.7(0.1)†	99.7(0.2)†	99.6(0.2)†	LQ
RACE/ETHNICITY						
White	99.6(0.1)*	99.9(0.0)†	99.9(0.1)	100.0(0.0)†	100.0(0.0)†	L
Black	93.1(1.0)*	97.5(0.7)†	99.0(0.4)†	98.8(0.6)†	97.8(0.6)†	LQ
Hispanic	94.3(1.3)*	98.0(0.8)	99.0(0.6)†	98.9(0.6)†	99.5(0.5)†	LQ
Other	98.0(1.1)	99.8(0.4)	100.0(0.0)	99.5(0.6)	99.7(0.5)	N
GRADE						
Below Modal Grade	96.0(0.5)*	98.4(0.4)†	99.3(0.3)†	99.3(0.2)†	99.1(0.3)†	LQ
At Modal Grade	99.4(0.1)*	99.9(0.1)†	99.9(0.0)†	99.9(0.0)†	99.9(0.1)†	LQ
Above Modal Grade	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	99.3(0.2)	99.5(0.2)	99.8(0.1)	99.7(0.3)	99.4(0.3)	N
Southeast	97.3(0.4)*	98.9(0.4)†	99.5(0.3)†	99.6(0.2)†	99.4(0.3)†	LQ
Central	99.1(0.2)*	99.8(0.1)†	99.8(0.3)	99.9(0.2)†	99.8(0.1)†	L
West	98.1(0.3)*	99.5(0.2)†	99.8(0.1)†	99.6(0.2)†	99.7(0.3)†	LQ
TYPE OF COMMUNITY						
Extreme Rural	98.6(0.4)*	99.2(0.3)	99.9(0.2)†	99.6(0.5)	99.9(0.1)	L
Disadvantaged Urban	93.8(1.4)	97.9(0.6)†	98.7(0.7)†	98.6(0.8)†	97.0(1.2)	LQ
Advantaged Urban	99.8(0.1)	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	98.7(0.1)*	99.6(0.2)†	99.8(0.1)†	99.8(0.1)†	99.8(0.1)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	96.4(0.6)	97.9(0.9)	98.6(1.0)	99.5(0.4)†	98.5(1.1)	L
Graduated H.S.	99.0(0.2)	99.6(0.3)	99.8(0.1)†	99.7(0.2)	99.3(0.3)	Q
Some Educ After H.S.	99.6(0.2)	99.8(0.2)	99.9(0.1)	99.9(0.1)	100.0(0.1)	L
Graduated College	99.7(0.1)	99.9(0.1)	99.9(0.1)	99.9(0.2)	99.9(0.1)	N
Unknown	95.5(0.7)*	98.6(0.6)†	98.9(0.5)†	98.4(0.7)†	98.7(0.6)†	LQ
TYPE OF SCHOOL						
Public	98.4(0.2)*	99.4(0.1)†	99.7(0.1)†	99.7(0.1)†	99.5(0.1)†	LQ
Non-Public	99.8(0.3)	99.8(0.1)	100.0(0.0)	100.0(0.0)	99.9(0.1)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	94.1(0.6)*	97.9(0.5)†	98.8(0.4)†	98.8(0.3)†	98.3(0.5)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 200

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	86.0(0.7)*	89.8(0.8)†*	91.6(1.0)†	92.3(0.7)†	93.1(0.5)†	L
SEX						
Male	87.2(0.8)*	91.9(0.8)†	92.9(1.0)†	92.7(0.8)†	93.1(0.8)†	LQ
Female	84.7(0.8)*	87.9(1.0)*	90.3(1.2)†	92.0(0.8)†	93.1(0.7)†	L
RACE/ETHNICITY						
White	92.2(0.5)*	94.4(0.6)†*	96.1(0.8)†	96.9(0.4)†	97.9(0.4)†	L
Black	57.3(2.4)*	68.6(2.4)†	73.6(3.0)†	77.6(3.6)†	73.8(2.8)†	LQ
Hispanic	62.2(2.4)*	75.5(3.3)†*	76.7(3.2)†	80.2(2.9)†	86.2(2.6)†	L
Other	80.9(2.9)*	94.2(2.4)†	93.6(3.8)†	88.1(4.9)	94.5(1.9)†	LQ
GRADE						
Below Modal Grade	71.4(1.6)*	78.0(1.8)†*	83.1(1.9)†	84.9(1.5)†	87.1(1.2)†	L
At Modal Grade	91.3(0.6)*	94.4(0.6)†*	95.7(0.7)†	96.5(0.5)†	96.7(0.6)†	LQ
Above Modal Grade	98.4(0.9)	100.0(0.0)	94.1(3.3)	96.3(6.1)	100.0(0.0)	N
REGION						
Northeast	90.7(1.4)	91.5(1.1)	93.5(1.2)	92.6(1.8)	91.6(1.5)	N
Southeast	78.1(1.7)*	83.6(2.2)*	89.8(1.7)†	91.0(1.2)†	90.7(1.5)†	L
Central	89.9(1.1)*	92.0(1.3)	91.9(3.5)	94.6(1.8)	95.4(0.8)†	L
West	83.5(1.5)*	91.3(1.4)†	91.3(1.6)†	91.2(1.3)†	94.1(1.0)†	L
TYPE OF COMMUNITY						
Extreme Rural	86.2(2.4)*	87.8(2.4)*	95.9(1.0)†	91.3(2.2)	96.4(1.4)†	L
Disadvantaged Urban	64.1(3.0)	72.4(3.4)	73.4(5.8)	75.7(4.6)	72.2(3.2)	L
Advantaged Urban	96.2(0.6)*	98.8(0.6)†	97.5(1.5)	97.2(1.2)	98.9(0.4)†	N
Other	86.1(0.8)*	91.0(0.8)†*	92.5(0.9)†	94.4(0.7)†	94.7(0.5)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	71.6(1.6)*	75.8(2.4)	79.8(3.5)	82.4(2.9)†	82.4(3.1)†	L
Graduated H.S.	87.0(0.8)	88.6(1.1)	90.7(1.4)	91.4(1.1)†	89.3(1.2)	L
Some Educ After H.S.	93.4(0.9)*	94.9(1.4)	95.9(0.7)	96.6(0.8)†	98.0(0.7)†	L
Graduated College	95.0(0.5)*	95.5(0.7)	95.8(0.7)	96.4(0.5)	97.1(0.5)†	L
Unknown	70.1(1.9)*	77.9(2.1)†	78.1(3.1)	75.4(2.9)	79.9(1.9)†	L
TYPE OF SCHOOL						
Public	84.9(0.8)*	89.2(0.9)†*	91.3(1.0)†	91.6(0.8)†	92.7(0.5)†	LQ
Non-Public	95.7(1.0)	95.0(1.5)	97.3(1.8)	98.4(0.8)	96.4(1.1)	N
QUARTILES						
Upper	99.9(0.1)	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	95.5(0.3)*	98.2(0.2)†*	99.4(0.2)†	99.6(0.2)†	99.8(0.1)†	LQ
Lower	53.0(1.3)*	63.0(2.0)†*	67.5(2.7)†	70.1(2.1)†	72.9(1.5)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 250

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	48.8(1.1)*	50.9(1.6)*	52.5(1.6)*	56.5(1.0)†*	61.3(1.1)†	LQ
SEX						
Male	52.3(1.3)*	56.2(1.8)*	57.3(2.1)	59.8(1.3)†	62.9(1.4)†	L
Female	45.4(1.2)*	46.0(1.6)*	47.7(1.7)*	53.3(1.4)†*	59.6(1.4)†	LQ
RACE/ETHNICITY						
White	56.5(0.9)*	58.3(1.4)*	61.0(1.7)*	66.5(1.2)†*	71.1(1.3)†	LQ
Black	14.9(1.7)*	17.1(1.9)*	19.6(2.8)	24.3(3.3)†	26.2(2.8)†	L
Hispanic	18.1(1.8)*	24.1(5.1)	24.9(4.3)	30.0(2.8)†	36.5(2.9)†	L
Other	35.6(4.9)*	64.8(7.1)†	52.6(6.6)	47.1(10.2)	62.0(3.9)†	N
GRADE						
Below Modal Grade	26.4(1.3)*	28.3(2.1)*	33.0(1.9)†*	39.4(1.8)†*	46.3(1.7)†	LQ
At Modal Grade	56.8(1.1)*	59.7(1.7)*	61.9(1.6)†*	66.3(1.2)†	70.1(1.2)†	L
Above Modal Grade	82.3(4.0)	90.3(5.5)	67.3(6.9)*	52.3(11.5)*	93.0(6.5)	N
REGION						
Northeast	56.1(2.0)	55.1(2.7)	59.0(4.0)	58.1(2.7)	60.4(2.8)	N
Southeast	37.5(1.6)*	40.1(2.3)*	48.6(3.3)†	52.7(2.7)†	57.5(2.5)†	L
Central	54.8(2.0)*	54.1(3.5)*	49.5(6.3)	62.7(3.1)	66.2(2.2)†	LQ
West	44.5(2.4)*	53.0(3.3)	53.3(2.8)	53.2(2.2)†	60.4(2.2)†	L
TYPE OF COMMUNITY						
Extreme Rural	46.0(3.4)*	44.5(4.0)*	60.3(3.6)†	49.6(5.1)*	66.1(3.2)†	L
Disadvantaged Urban	21.3(1.9)	22.9(3.7)	21.0(3.4)	26.8(3.9)	27.0(3.7)	N
Advantaged Urban	68.2(1.5)*	77.8(3.2)†	68.4(3.8)	70.3(2.7)	78.8(2.8)†	N
Other	48.3(1.1)*	51.7(1.4)*	53.1(1.6)†*	60.3(1.5)†	62.8(1.4)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	26.0(1.2)	24.2(2.1)*	28.6(3.5)	31.1(2.4)	34.2(3.3)	L
Graduated H.S.	46.4(1.4)	43.1(2.0)	44.4(2.0)	47.4(1.7)	48.6(2.0)	N
Some Educ After H.S.	61.0(1.5)*	60.3(2.3)*	61.0(2.4)*	65.3(1.9)	71.3(1.7)†	LQ
Graduated College	67.[illegible](1.1)*	65.6(1.9)*	67.0(2.1)	70.2(1.4)	73.2(1.5)†	LQ
Unknown	25.7(2.1)	28.0(3.0)	23.9(2.6)	23.3(2.3)	31.0(2.6)	N
TYPE OF SCHOOL						
Public	46.7(1.2)*	49.2(1.8)*	51.9(1.7)†*	54.7(1.2)†*	60.2(1.2)†	L
Non-Public	68.8(2.6)	65.8(4.1)	66.8(8.2)	72.0(2.6)	68.9(3.1)	N
QUARTILES						
Upper	92.0(0.5)*	95.1(0.6)†*	97.8(0.5)†*	99.1(0.3)†	99.6(0.3)†	L
Middle Two	49.0(1.0)*	51.8(1.3)*	54.5(1.9)†*	61.6(1.1)†*	69.4(1.4)†	LQ
Lower	5.3(0.5)	5.2(0.8)	3.2(0.9)*	3.9(0.8)	6.5(0.8)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 300

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	11.1(0.5)	9.6(0.7)	9.1(0.9)	11.2(0.6)	12.0(0.8)	Q
SEX						
Male	13.1(0.6)	12.6(1.1)	11.9(1.3)	14.0(0.9)	14.2(1.1)	N
Female	9.0(0.5)	6.9(0.7)†*	6.3(1.1)*	8.5(0.6)	9.9(0.8)	Q
RACE/ETHNICITY						
White	13.4(0.5)	11.5(0.8)*	11.3(1.2)	14.2(0.8)	15.0(1.0)	LQ
Black	1.2(0.4)	0.8(0.3)	1.1(0.4)	1.5(0.5)	1.8(0.8)	N
Hispanic	1.8(0.8)	2.4(0.9)	1.5(0.7)	3.3(0.8)	3.3(1.3)	N
Other	5.6(2.0)*	15.9(3.5)†	7.4(2.8)	9.1(4.6)	14.0(2.7)†	N
GRADE						
Below Modal Grade	3.3(0.4)*	2.6(0.4)*	3.4(0.6)*	5.1(0.6)†	6.3(0.8)†	LQ
At Modal Grade	13.7(0.5)	12.3(0.9)	11.8(1.3)	14.7(0.9)	15.2(1.0)	Q
Above Modal Grade	34.5(5.0)	34.1(15.5)	21.5(10.6)	20.4(16.3)	69.9(19.5)	N
REGION						
Northeast	13.8(1.0)	11.2(1.3)	12.4(2.2)	12.6(1.6)	11.7(1.4)	N
Southeast	7.1(0.7)	5.1(0.6)*	6.5(1.1)	8.8(0.9)	11.0(2.1)	LQ
Central	13.2(1.0)	10.7(1.4)	7.4(1.6)†*	13.3(1.4)	13.6(1.3)	Q
West	9.4(0.8)	10.9(1.6)	10.2(1.7)	10.4(1.3)	11.7(1.1)	N
TYPE OF COMMUNITY						
Extreme Rural	9.0(1.4)	7.3(2.6)	9.0(2.2)	7.3(1.6)	12.7(2.1)	N
Disadvantaged Urban	2.5(0.4)	2.0(0.9)	1.7(0.6)	2.5(0.8)	2.6(0.9)	N
Advantaged Urban	20.0(1.6)	23.9(2.5)	17.3(3.3)	17.6(1.9)	20.2(3.4)	N
Other	10.6(0.4)	9.1(0.7)*	8.7(1.0)*	12.3(0.9)	12.1(0.8)	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	2.9(0.4)	1.8(0.8)	1.9(1.1)	2.5(0.8)	1.7(0.8)	N
Graduated H.S.	8.4(0.6)	4.9(0.7)†	4.5(1.0)†	6.3(1.0)	6.3(0.8)	Q
Some Educ After H.S.	15.7(1.1)	12.4(1.6)	9.5(1.3)†	12.8(1.1)	13.0(1.4)	Q
Graduated College	19.6(0.9)	15.7(1.3)†	15.7(2.0)	17.4(1.1)	17.7(1.3)	Q
Unknown	3.1(0.4)	2.6(0.8)	2.2(0.9)	1.7(0.7)	3.3(0.9)	N
TYPE OF SCHOOL						
Public	10.2(0.5)	8.9(0.8)*	8.9(0.9)	10.7(0.7)	11.9(0.9)	LQ
Non-Public	19.6(1.9)	16.0(2.4)	12.8(3.6)	16.2(1.5)	13.2(2.0)	L
QUARTILES						
Upper	36.5(0.8)*	33.8(2.0)*	34.2(3.2)	41.6(1.5)†	43.9(2.8)†	LQ
Middle Two	3.9(0.4)*	2.4(0.4)†	1.1(0.3)†	1.6(0.4)†	2.1(0.5)†	LQ
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

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NAEP 1992 Science Trend Assessment — Age 13

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 350

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	0.7(0.1)*	0.4(0.1)	0.2(0.1)†	0.4(0.1)	0.2(0.1)†	L
SEX						
Male	0.9(0.2)*	0.5(0.2)	0.3(0.2)	0.6(0.2)	0.3(0.1)†	L
Female	0.4(0.1)	0.2(0.1)	0.1(0.1)	0.2(0.1)	0.2(0.2)	N
RACE/ETHNICITY						
White	0.8(0.1)*	0.4(0.1)	0.3(0.1)†	0.5(0.1)	0.3(0.1)†	L
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	N
Hispanic	0.0(0.1)	0.0(0.0)	0.0(0.1)	0.1(0.1)	0.0(0.0)	N
Other	0.1(0.5)	0.8(1.0)	0.2(0.5)	0.7(1.7)	0.6(0.5)	N
GRADE						
Below Modal Grade	0.1(0.2)	0.1(0.1)	0.0(0.1)	0.1(0.0)	0.0(0.1)	N
At Modal Grade	0.8(0.1)*	0.5(0.2)	0.3(0.1)†	0.5(0.2)	0.3(0.1)†	L
Above Modal Grade	4.4(1.9)	3.8(7.7)	0.0(0.0)	5.4(8.4)	19.1(23.5)	N
REGION						
Northeast	0.9(0.3)	0.5(0.2)	0.5(0.3)	0.4(0.2)	0.2(0.3)	N
Southeast	0.3(0.1)	0.1(0.1)	0.1(0.1)	0.4(0.2)	0.2(0.3)	N
Central	1.0(0.3)	0.4(0.4)	0.1(0.2)	0.5(0.3)	0.3(0.2)	N
West	0.4(0.1)	0.4(0.3)	0.2(0.2)	0.3(0.2)	0.2(0.1)	N
TYPE OF COMMUNITY						
Extreme Rural	0.5(0.3)	0.4(1.0)	0.1(0.5)	0.3(0.3)	0.3(0.3)	N
Disadvantaged Urban	0.1(0.1)	0.1(0.1)	0.0(0.0)	0.1(0.2)	0.0(0.1)	N
Advantaged Urban	1.6(0.3)	1.2(0.6)	0.7(0.5)	1.4(0.7)	0.6(0.9)	N
Other	0.6(0.1)	0.3(0.1)	0.2(0.1)	0.3(0.1)	0.2(0.1)	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.1(0.1)	0.0(0.0)	0.0(0.0)	0.1(0.2)	0.0(0.1)	N
Graduated H.S.	0.3(0.1)	0.1(0.1)	0.0(0.1)	0.1(0.1)	0.0(0.0)	L
Some Educ After H.S.	1.0(0.2)	0.4(0.6)	0.1(0.1)†	0.3(0.2)	0.3(0.2)	N
Graduated College	1.4(0.3)*	0.7(0.2)	0.5(0.2)	0.8(0.3)	0.4(0.2)†	L
Unknown	0.1(0.1)	0.0(0.1)	0.0(0.0)	0.0(0.1)	0.1(0.1)	N
TYPE OF SCHOOL						
Public	0.6(0.1)	0.3(0.1)	0.2(0.1)	0.4(0.1)	0.3(0.1)	N
Non-Public	1.6(0.3)*	0.8(0.5)	0.3(0.7)	0.5(0.5)	0.1(0.2)†	L
QUARTILES						
Upper	2.6(0.4)*	1.4(0.4)	0.9(0.4)†	1.6(0.4)	0.9(0.4)†	L
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 150

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	99.8(0.0)*	99.7(0.1)*	99.9(0.1)	99.9(0.2)	100.0(0.0)†	L
SEX						
Male	99.9(0.0)	99.8(0.1)	99.9(0.1)	99.9(0.2)	99.9(0.1)	N
Female	99.7(0.1)*	99.6(0.1)*	99.9(0.1)	99.9(0.2)	100.0(0.0)†	L
RACE/ETHNICITY						
White	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
Black	98.5(0.3)*	97.9(0.5)*	99.7(0.4)	99.4(0.7)	99.8(0.3)†	L
Hispanic	99.7(0.2)	98.9(0.9)	99.8(0.4)	99.6(0.9)	100.0(0.0)	N
Other	99.9(0.1)	99.8(0.4)	99.2(1.0)	99.9(0.2)	99.9(0.3)	N
GRADE						
Below Modal Grade	98.9(0.3)*	98.6(0.4)*	99.6(0.4)	99.4(0.7)	99.8(0.2)†	L
At Modal Grade	100.0(0.0)	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	L
Above Modal Grade	99.9(0.0)	99.8(0.2)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	99.9(0.1)	99.6(0.2)	99.9(0.3)	99.8(0.4)	100.0(0.1)	N
Southeast	99.5(0.2)	99.5(0.3)	99.9(0.1)	99.9(0.2)	99.9(0.2)	L
Central	99.9(0.0)	99.8(0.2)	100.0(0.0)	99.9(0.2)	100.0(0.0)	N
West	99.9(0.0)*	99.7(0.2)	99.8(0.2)	99.9(0.2)	100.0(0.0)	N
TYPE OF COMMUNITY						
Extreme Rural	99.9(0.0)	99.8(0.2)	100.0(0.0)	99.9(0.4)	100.0(0.1)	N
Disadvantaged Urban	99.0(0.3)	98.2(0.9)	99.3(0.9)	99.2(0.8)	99.8(0.3)	N
Advantaged Urban	100.0(0.0)	100.0(0.1)	100.0(0.0)	99.9(0.1)	99.9(0.2)	N
Other	99.8(0.0)*	99.8(0.1)	99.9(0.1)	99.9(0.1)	100.0(0.0)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	99.5(0.2)	99.1(0.4)	99.6(0.5)	99.5(0.7)	99.9(0.2)	N
Graduated H.S.	99.9(0.0)	99.6(0.2)	99.9(0.1)	99.9(0.3)	99.9(0.1)	N
Some Educ After H.S.	100.0(0.0)	99.9(0.1)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
Graduated College	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.1)	N
Unknown	98.4(0.6)	98.3(1.1)	98.7(1.2)	98.6(2.6)	99.9(0.4)	N
TYPE OF SCHOOL						
Public	99.8(0.0)*	99.6(0.1)*	99.9(0.1)	99.8(0.2)	100.0(0.0)†	L
Non-Public	100.0(0.0)	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	99.2(0.2)*	98.7(0.3)*	99.6(0.3)	99.4(0.6)	99.8(0.2)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 200

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	97.1(0.2)	95.7(0.5)†*	97.1(0.5)	96.7(0.3)	97.8(0.5)	Q
SEX						
Male	97.8(0.2)	96.8(0.5)	97.4(0.7)	96.8(0.5)	98.0(0.6)	N
Female	96.4(0.3)	94.6(0.8)*	96.9(0.5)	96.6(0.6)	97.5(0.7)	L
RACE/ETHNICITY						
White	99.2(0.1)	98.6(0.2)	98.8(0.3)	99.0(0.2)	99.3(0.3)	N
Black	83.6(1.3)*	79.7(1.9)*	90.9(2.1)†	88.3(1.9)	92.1(1.8)†	L
Hispanic	93.1(1.7)	86.9(2.9)	93.3(2.4)	91.9(2.2)	94.6(2.6)	N
Other	97.1(1.8)	95.1(2.2)	89.3(4.8)	96.3(1.6)	95.1(2.6)	N
GRADE						
Below Modal Grade	88.4(1.1)*	85.6(1.6)*	90.7(2.1)	89.9(1.6)	92.9(1.3)†	L
At Modal Grade	98.5(0.1)*	97.5(0.4)*	98.5(0.3)	98.6(0.2)	99.3(0.3)†	LQ
Above Modal Grade	99.0(0.3)	97.3(1.2)	98.0(1.9)	98.8(1.1)	98.7(0.7)	N
REGION						
Northeast	98.0(0.4)	95.7(0.9)	97.1(1.5)	96.4(1.1)	98.3(0.6)	N
Southeast	94.2(0.7)	93.9(1.5)	96.6(1.2)	95.8(0.6)	96.6(1.0)	L
Central	98.0(0.3)	97.4(0.7)	98.4(0.5)	97.8(0.7)	98.6(0.8)	N
West	97.3(0.3)	95.0(0.9)	96.3(0.9)	96.7(0.6)	97.6(0.9)	Q
TYPE OF COMMUNITY						
Extreme Rural	98.1(0.6)	96.3(1.2)	98.9(2.3)	97.4(1.3)	98.5(1.3)	N
Disadvantaged Urban	88.6(1.4)	84.8(3.1)	85.4(4.0)	86.8(3.3)	93.3(2.4)	Q
Advantaged Urban	99.0(0.4)	98.5(0.5)	99.0(1.6)	98.8(0.9)	97.1(2.0)	N
Other	97.6(0.2)	96.4(0.6)	97.7(0.5)	97.6(0.3)	98.5(0.6)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	93.1(0.8)	90.1(1.6)	91.7(2.3)	91.7(2.2)	93.1(3.3)	N
Graduated H.S.	97.3(0.3)	95.2(0.8)†	96.7(0.9)	94.9(1.0)	96.9(0.9)	N
Some Educ After H.S.	98.9(0.2)	98.0(0.4)	98.6(0.8)	98.7(0.5)	98.8(0.7)	N
Graduated College	99.5(0.1)	98.2(0.3)†	99.2(0.3)	98.7(0.3)	98.9(0.5)	N
Unknown	85.8(1.6)	85.4(3.2)	83.9(5.0)	84.8(5.0)	90.3(4.0)	N
TYPE OF SCHOOL						
Public	97.0(0.2)	95.4(0.6)†*	97.0(0.5)	96.5(0.4)	97.5(0.5)	Q
Non-Public	99.5(0.2)	97.9(0.7)*	99.8(0.6)	99.5(0.5)	100.0(0.1)	L
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.9(0.1)	99.7(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	L
Lower	88.7(0.7)	83.2(1.6)†*	88.5(1.7)	86.8(1.2)	91.1(1.7)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 250

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	81.6(0.7)	76.6(1.0)†*	80.7(1.3)	81.2(0.9)	83.3(1.2)	LQ
SEX						
Male	85.2(0.7)	81.2(1.2)†	82.4(1.4)	82.5(1.2)	85.0(1.4)	Q
Female	78.0(1.0)	72.2(1.3)†*	79.1(1.7)	79.9(1.4)	81.6(1.4)	LQ
RACE/ETHNICITY						
White	88.2(0.4)	84.9(0.9)†*	87.8(1.4)	89.6(0.8)	90.5(1.0)	LQ
Black	40.5(1.5)*	35.0(2.1)*	52.2(3.2)†	51.4(3.7)†	55.7(3.7)†	L
Hispanic	61.5(1.7)	48.0(2.7)†*	60.0(7.2)	59.9(5.0)	68.3(6.6)	N
Other	78.7(2.9)	65.4(5.8)	71.0(7.0)	79.2(3.8)	78.4(4.4)	N
GRADE						
Below Modal Grade	53.6(1.4)	49.9(2.6)*	58.1(2.8)	59.5(2.5)	61.0(3.1)	L
At Modal Grade	86.0(0.6)*	81.3(1.0)†*	85.2(1.4)*	87.2(0.8)*	90.5(0.9)†	LQ
Above Modal Grade	88.2(1.0)	83.0(2.4)	86.8(2.6)	86.8(2.3)	88.7(2.9)	N
REGION						
Northeast	85.4(1.6)	77.5(1.9)†*	80.8(3.9)	82.1(2.8)	85.8(2.3)	Q
Southeast	72.2(1.5)	71.2(2.3)	76.9(1.9)	76.8(2.2)	76.1(2.0)	L
Central	85.1(1.1)	81.1(2.3)*	85.7(1.8)	86.9(2.0)	90.3(2.2)	LQ
West	79.9(1.2)	74.8(2.5)	78.8(3.0)	79.0(1.9)	81.7(3.0)	N
TYPE OF COMMUNITY						
Extreme Rural	83.3(2.1)	77.8(2.8)	86.4(6.3)	84.8(2.7)	85.9(3.3)	N
Disadvantaged Urban	54.6(2.9)	48.9(5.1)	41.0(3.9)†*	51.6(6.4)	60.0(4.2)	Q
Advantaged Urban	90.0(1.8)	89.7(1.2)	87.7(5.3)	89.9(2.7)	84.3(4.1)	N
Other	82.9(0.7)	77.9(1.3)†*	82.6(1.4)	83.3(1.0)	86.8(1.4)	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	64.8(1.5)	58.2(2.6)	59.8(3.5)	62.0(4.3)	61.2(4.8)	N
Graduated H.S.	80.0(1.0)	72.3(1.5)†	74.1(2.1)†	73.4(1.5)†	76.6(2.5)	Q
Some Educ After H.S.	87.0(0.8)	83.1(1.4)	86.8(1.9)	88.1(1.6)	87.5(1.3)	N
Graduated College	92.9(0.5)	86.7(1.4)†	89.6(1.4)	88.9(1.1)†	90.2(1.3)	Q
Unknown	52.7(2.6)	52.1(4.2)	47.4(7.9)	48.5(5.5)	54.1(7.5)	N
TYPE OF SCHOOL						
Public	80.8(0.7)	75.8(1.0)†*	80.1(1.4)	80.4(0.9)	82.0(1.2)	LQ
Non-Public	92.9(1.2)	83.5(2.8)†*	96.5(2.2)	90.6(4.1)	95.5(2.0)	N
QUARTILES						
Upper	99.7(0.1)*	99.5(0.2)	100.0(0.0)†	100.0(0.0)†	100.0(0.0)	L
Middle Two	91.9(0.4)*	88.1(0.7)†*	95.8(0.6)†	96.5(0.6)†	97.5(0.6)†	LQ
Lower	42.6(1.1)	30.5(1.5)†	31.2(2.4)†	31.7(2.2)†	38.2(3.0)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 300

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	41.7(0.9)*	37.3(0.9)†*	41.3(1.4)*	43.3(1.3)	46.6(1.5)†	LQ
SEX						
Male	48.8(1.1)	45.2(1.2)	48.8(2.1)	48.2(1.6)	50.9(2.0)	N
Female	34.8(1.0)*	29.9(1.2)†*	34.1(1.5)*	38.7(1.7)	42.0(1.7)†	LQ
RACE/ETHNICITY						
White	47.5(0.7)*	43.9(1.1)†*	48.7(1.7)*	51.2(1.5)	55.4(1.7)†	LQ
Black	7.7(1.0)	6.5(1.1)*	12.5(2.2)	15.7(4.0)	14.1(2.5)	L
Hispanic	18.5(2.1)	11.1(2.0)†*	14.8(2.9)	21.1(3.3)	23.0(3.8)	Q
Other	36.6(3.8)	25.2(4.8)	35.0(8.1)	45.2(6.5)	42.9(6.1)	N
GRADE						
Below Modal Grade	14.5(0.9)	16.0(1.8)	17.9(1.9)	19.6(1.5)†	19.1(2.2)	L
At Modal Grade	45.7(0.8)*	40.7(1.1)†*	45.6(1.7)*	50.0(1.5)†	55.2(1.7)†	LQ
Above Modal Grade	50.5(1.8)	45.4(3.2)	50.6(5.9)	49.2(3.2)	54.9(3.4)	N
REGION						
Northeast	47.9(1.8)	38.3(1.9)†*	46.6(4.0)	45.7(2.7)	52.0(2.5)	Q
Southeast	31.6(1.8)	32.2(2.2)	37.0(2.0)	37.5(2.7)	36.9(2.8)	L
Central	45.0(1.3)*	42.1(2.2)*	45.0(2.5)*	51.7(3.1)	56.4(2.6)†	LQ
West	38.6(1.4)	35.0(2.2)	36.3(3.5)	38.7(2.5)	42.2(3.4)	N
TYPE OF COMMUNITY						
Extreme Rural	39.9(2.3)	36.7(2.9)*	43.6(6.0)	46.1(3.7)	47.7(3.2)	L
Disadvantaged Urban	18.2(1.9)	15.3(2.5)	7.4(1.6)†*	18.0(5.3)	19.5(3.5)	Q
Advantaged Urban	55.0(3.2)	56.1(1.8)	53.6(7.1)	55.5(4.7)	52.0(4.8)	N
Other	42.3(0.8)*	37.5(1.1)†*	41.9(1.6)*	44.5(1.5)	50.2(1.8)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	21.6(1.0)	17.3(1.7)	14.9(2.4)†	18.2(2.8)	16.8(2.5)	N
Graduated H.S.	35.8(0.8)	29.5(1.3)†	29.5(2.0)†	30.8(1.5)†	32.1(2.7)	Q
Some Educ After H.S.	46.0(1.3)	41.6(2.1)	46.7(3.0)	46.7(1.9)	48.5(2.1)	N
Graduated College	59.6(1.2)	52.5(1.9)†*	55.3(2.4)	57.3(2.0)	60.0(1.7)	Q
Unknown	16.6(2.3)	15.5(2.9)	11.4(4.4)	13.5(3.9)	18.3(5.9)	N
TYPE OF SCHOOL						
Public	40.5(0.8)*	36.6(0.9)†*	39.9(1.5)	42.0(1.3)	44.8(1.5)†	LQ
Non-Public	58.9(2.8)	44.2(2.6)†*	74.6(10.9)	59.8(6.7)	63.1(5.3)	N
QUARTILES						
Upper	86.6(0.9)*	82.8(1.3)*	96.7(1.0)†	98.4(0.5)†	99.4(0.3)†	LQ
Middle Two	38.2(0.9)	32.5(1.1)†*	34.1(1.2)†*	37.3(1.6)	43.2(2.3)	LQ
Lower	3.8(0.4)*	1.7(0.3)†*	0.3(0.3)†	0.4(0.4)†	0.5(0.3)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at above anchor point 350

	1977	1982	1986	1990	1992	TREND TESTS
TOTAL	8.5(0.4)	7.1(0.4)*	7.9(0.7)	9.2(0.5)	10.1(0.7)	LQ
SEX						
Male	11.8(0.6)	10.4(0.8)	11.4(1.3)	13.0(0.8)	13.6(1.0)	L
Female	5.3(0.4)	3.9(0.4)†*	4.5(0.8)	5.5(0.5)	6.6(1.0)	Q
RACE/ETHNICITY						
White	10.0(0.4)*	8.6(0.6)*	9.6(0.9)	11.4(0.7)	12.8(0.9)†	LQ
Black	0.4(0.2)	0.2(0.2)	0.9(0.6)	1.5(0.8)	0.8(1.1)	N
Hispanic	1.8(0.6)	1.4(0.9)	1.1(0.7)	2.1(1.6)	2.5(1.2)	N
Other	6.3(2.2)	2.8(1.9)	8.6(6.9)	11.6(4.1)	10.2(2.8)	N
GRADE						
Below Modal Grade	1.3(0.3)	2.0(0.6)	2.0(0.9)	2.6(0.8)	2.4(0.7)	N
At Modal Grade	9.3(0.4)*	7.8(0.6)*	8.7(0.9)*	10.9(0.6)	12.3(0.8)†	LQ
Above Modal Grade	12.6(1.0)	9.6(1.0)	12.1(3.2)	12.1(3.0)	16.0(4.0)	N
REGION						
Northeast	10.8(0.9)	7.6(0.9)*	10.8(1.9)	10.2(1.1)	12.9(1.9)	N
Southeast	5.2(0.7)	5.7(0.9)	6.0(1.2)	6.7(1.0)	6.2(0.7)	N
Central	9.6(0.6)	7.9(1.2)*	8.7(1.7)	12.5(1.2)	13.1(1.4)	LQ
West	7.2(0.8)	6.7(0.8)	5.9(1.7)	7.4(1.1)	8.9(1.9)	N
TYPE OF COMMUNITY						
Extreme Rural	6.5(1.1)	5.8(1.4)	9.4(2.6)	8.5(1.8)	8.9(1.9)	N
Disadvantaged Urban	2.7(0.8)	1.5(0.7)	0.3(0.6)	2.7(1.2)	2.1(0.7)	Q
Advantaged Urban	13.9(1.5)	13.9(2.0)	13.3(3.0)	15.0(2.8)	12.9(2.7)	N
Other	8.5(0.4)	7.0(0.5)*	7.5(0.7)*	9.3(0.7)	11.3(1.1)	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	2.2(0.3)	1.9(0.6)	0.7(0.6)	1.3(0.7)	1.6(0.6)	N
Graduated H.S.	5.7(0.3)	3.9(0.7)	3.7(0.8)	3.8(0.8)	4.8(1.2)	N
Some Educ After H.S.	8.7(0.8)	7.4(1.2)	8.0(1.4)	8.8(0.9)	7.8(1.0)	N
Graduated College	15.7(0.8)	12.4(0.8)†*	13.2(1.4)	15.3(0.9)	16.3(1.2)	Q
Unknown	1.7(0.6)	1.8(1.0)	1.0(2.3)	0.8(1.2)	2.4(2.3)	N
TYPE OF SCHOOL						
Public	8.1(0.4)	6.9(0.4)*	7.2(0.7)	8.7(0.5)	9.6(0.8)	LQ
Non-Public	14.8(1.9)	8.5(2.3)	23.1(7.7)	15.8(3.2)	14.1(2.7)	N
QUARTILES						
Upper	29.2(1.1)*	24.5(1.4)†*	31.1(2.0)*	36.3(1.5)†	39.7(2.0)†	LQ
Middle Two	2.4(0.2)*	1.9(0.2)*	0.2(0.1)†	0.2(0.2)†	0.5(0.3)†	LQ
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1977, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors

	1977	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	219.9(1.2)	220.8(1.8)	224.3(1.2)	228.7(0.8)	230.6(1.0)
St. Dev.	44.9(0.6)	40.9(1.4)	41.6(0.6)	40.2(0.4)	39.9(0.7)
Percentiles					
5	143.8(2.3)	150.9(4.9)	155.0(1.3)	159.8(1.3)	162.8(2.0)
10	160.9(2.1)	166.8(2.6)	169.9(1.8)	176.1(1.1)	177.8(1.8)
25	190.1(1.6)	194.4(2.2)	195.9(1.3)	202.0(1.4)	203.8(1.6)
50	221.5(1.1)	221.4(2.4)	225.1(1.7)	230.3(0.9)	232.1(0.9)
75	251.0(1.1)	249.0(2.0)	253.1(1.7)	256.6(0.8)	258.4(1.0)
90	276.5(1.2)	272.4(3.9)	276.9(2.0)	278.8(1.3)	280.6(1.6)
95	291.4(1.2)	286.4(3.7)	290.9(1.9)	292.1(1.4)	293.6(1.4)
MALE STUDENTS					
Mean	222.1(1.3)	221.0(2.3)	227.3(1.4)	230.3(1.1)	234.7(1.2)
St. Dev.	45.0(0.7)	42.0(2.0)	41.9(0.7)	41.9(0.6)	40.7(1.0)
Percentiles					
5	146.8(2.6)	150.4(5.5)	158.0(3.6)	159.6(2.2)	164.7(3.0)
10	163.2(1.9)	166.5(3.8)	172.9(1.8)	176.3(2.3)	180.9(2.7)
25	191.9(1.9)	193.5(4.1)	198.7(1.8)	202.1(2.5)	207.2(1.9)
50	223.6(1.4)	221.3(3.6)	227.9(1.7)	231.6(1.9)	236.2(1.5)
75	253.4(1.4)	250.4(3.1)	256.1(1.9)	259.4(1.0)	263.1(1.5)
90	279.1(1.3)	274.7(4.3)	280.3(2.0)	283.3(1.8)	285.8(1.5)
95	294.2(1.5)	287.1(5.3)	294.8(2.7)	296.3(2.4)	298.6(1.5)
FEMALE STUDENTS					
Mean	217.6(1.2)	220.7(2.0)	221.3(1.4)	227.1(1.0)	226.7(1.0)
St. Dev.	44.6(0.8)	39.8(1.3)	41.1(0.8)	38.4(0.5)	38.8(0.6)
Percentiles					
5	141.3(3.5)	151.2(6.6)	152.5(2.5)	159.9(2.4)	161.0(3.4)
10	158.5(2.2)	167.5(3.1)	166.9(2.6)	175.8(2.2)	175.3(2.2)
25	188.3(1.4)	195.3(2.6)	193.2(1.8)	201.9(1.2)	200.9(1.5)
50	219.5(1.2)	221.4(3.6)	222.5(2.0)	229.2(1.1)	228.5(1.4)
75	248.6(1.1)	247.4(2.4)	250.2(1.9)	254.0(1.1)	253.7(1.5)
90	273.8(1.6)	270.6(3.4)	273.3(1.6)	274.6(1.9)	275.0(1.7)
95	288.2(1.6)	284.4(3.3)	287.0(2.6)	287.0(1.9)	287.7(1.2)
WHITE STUDENTS					
Mean	229.6(0.9)	229.0(1.9)	231.9(1.2)	237.5(0.8)	239.1(1.0)
St. Dev.	40.0(0.5)	37.6(1.3)	39.2(0.7)	36.3(0.4)	36.4(0.5)
Percentiles					
5	163.2(1.3)	167.0(3.0)	166.5(2.3)	176.9(1.4)	178.0(2.0)
10	177.6(1.1)	182.2(3.1)	181.0(1.5)	189.9(1.3)	191.7(1.5)
25	202.4(1.1)	203.8(2.6)	205.5(1.5)	212.6(0.8)	214.5(1.3)
50	229.8(0.9)	228.6(2.4)	232.5(1.6)	238.3(1.0)	240.0(1.1)
75	256.9(0.8)	254.9(2.0)	258.8(1.4)	262.3(1.0)	264.2(1.3)
90	281.1(1.1)	277.6(2.8)	281.7(1.7)	283.5(1.4)	285.1(1.6)
95	295.4(1.9)	290.8(4.0)	294.9(2.5)	295.7(1.3)	297.5(0.8)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors (continued)

	1977	1982	1986	1990	1992
BLACK STUDENTS					
Mean	174.8(1.8)	187.0(3.0)	196.2(1.9)	196.4(2.0)	200.3(2.7)
St. Dev.	41.4(1.0)	37.7(1.9)	38.3(1.0)	38.6(1.0)	37.3(0.7)
Percentiles					
5	107.0(3.5)	123.6(11.0)	132.8(3.2)	131.3(4.2)	138.0(4.2)
10	122.8(3.4)	136.7(8.3)	146.9(3.5)	145.3(3.8)	151.6(4.0)
25	146.6(2.4)	159.2(4.9)	169.7(2.6)	169.8(2.6)	173.7(3.5)
50	173.8(2.5)	188.2(5.0)	195.9(2.2)	196.3(2.5)	201.1(3.0)
75	202.9(1.8)	214.4(3.8)	222.6(1.5)	224.1(1.7)	226.3(3.4)
90	229.2(2.9)	236.4(4.7)	246.4(3.7)	246.8(2.4)	248.4(3.0)
95	244.1(2.9)	246.5(3.3)	259.5(3.5)	260.0(5.4)	260.5(4.6)
HISPANIC STUDENTS					
Mean	191.9(2.7)	189.0(4.2)	199.4(3.1)	206.2(2.2)	204.7(2.8)
St. Dev.	41.2(1.4)	36.6(2.3)	38.9(1.6)	37.0(1.7)	37.3(1.4)
Percentiles					
5	125.2(7.0)	127.3(9.6)	134.1(10.1)	146.2(5.5)	143.0(3.0)
10	139.8(3.3)	141.9(16.8)	148.1(5.2)	158.6(4.3)	156.8(3.9)
25	163.9(4.3)	161.9(7.4)	172.6(3.4)	180.6(3.7)	179.1(3.5)
50	191.4(3.6)	190.8(4.8)	199.8(6.7)	206.2(3.7)	204.8(4.1)
75	219.0(3.2)	215.9(3.4)	225.6(4.1)	232.7(4.1)	230.4(2.3)
90	245.7(4.9)	236.2(5.6)	252.1(5.4)	252.9(4.4)	253.7(5.5)
95	261.3(6.4)	246.0(7.6)	264.9(6.7)	266.8(6.9)	264.9(3.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors

	1977	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	247.4(1.1)	250.1(1.3)	251.4(1.4)	255.2(0.9)	258.0(0.8)
St. Dev.	43.5(0.4)	38.6(0.5)	36.6(0.6)	37.6(0.7)	36.9(0.5)
Percentiles					
5	173.7(1.7)	185.2(2.2)	188.9(2.2)	191.4(2.0)	193.1(1.5)
10	190.6(1.4)	199.6(1.8)	203.3(2.0)	205.9(1.7)	208.9(1.3)
25	218.4(1.4)	224.1(1.1)	227.2(1.3)	230.0(1.5)	234.7(1.3)
50	248.6(1.2)	250.9(1.3)	252.1(1.8)	256.4(1.2)	260.4(1.0)
75	277.5(0.9)	276.7(1.5)	276.5(1.5)	281.1(0.9)	283.8(1.0)
90	302.4(0.9)	299.2(1.6)	298.2(2.0)	302.4(1.1)	303.1(1.2)
95	316.9(1.5)	312.8(1.3)	310.3(1.6)	315.1(1.9)	314.6(1.4)
MALE STUDENTS					
Mean	251.1(1.3)	255.6(1.5)	256.1(1.6)	258.5(1.1)	260.1(1.2)
St. Dev.	43.9(0.5)	38.7(0.6)	37.4(1.0)	38.8(0.8)	38.0(0.8)
Percentiles					
5	176.7(1.9)	190.2(2.6)	192.3(4.2)	191.9(2.5)	193.4(2.7)
10	193.5(1.6)	204.4(1.6)	207.2(2.5)	207.3(3.4)	209.4(2.4)
25	221.5(1.7)	229.5(1.7)	231.1(1.6)	232.9(1.4)	235.8(1.1)
50	252.4(1.5)	256.7(1.5)	256.9(2.0)	260.3(1.4)	262.7(1.5)
75	281.6(1.2)	282.6(1.5)	282.4(1.4)	285.8(2.2)	287.0(1.8)
90	306.5(1.3)	305.0(1.7)	303.4(1.6)	307.4(1.5)	306.4(1.8)
95	321.2(1.5)	318.3(2.3)	316.2(2.2)	320.2(1.2)	318.1(1.6)
FEMALE STUDENTS					
Mean	243.7(1.2)	245.0(1.3)	246.9(1.5)	251.8(1.1)	256.0(1.0)
St. Dev.	42.8(0.5)	37.9(0.7)	35.3(0.6)	36.1(0.8)	35.7(0.8)
Percentiles					
5	170.8(1.6)	180.2(1.9)	186.3(2.1)	190.6(2.1)	192.7(1.6)
10	187.7(1.8)	195.5(2.3)	200.5(2.9)	204.8(1.5)	208.4(1.4)
25	215.5(1.7)	219.7(1.4)	223.4(1.5)	227.8(1.6)	233.4(1.3)
50	245.0(1.2)	246.1(1.7)	248.0(1.7)	253.1(1.2)	258.2(1.4)
75	273.0(1.5)	271.0(1.9)	271.0(1.8)	276.8(1.6)	280.7(1.9)
90	297.7(1.0)	292.8(1.5)	291.3(1.7)	296.8(1.1)	299.8(1.1)
95	312.1(2.2)	305.3(1.8)	304.0(3.6)	308.6(1.4)	311.1(1.7)
WHITE STUDENTS					
Mean	256.1(0.8)	257.3(1.1)	259.2(1.4)	264.1(0.9)	267.1(1.0)
St. Dev.	39.5(0.3)	35.7(0.6)	33.6(0.8)	33.8(0.5)	31.8(0.6)
Percentiles					
5	190.8(0.9)	198.0(1.7)	203.5(2.7)	208.6(1.6)	212.6(2.2)
10	205.2(1.2)	210.8(1.7)	215.8(1.5)	220.4(1.2)	225.7(1.6)
25	229.3(1.3)	233.2(1.2)	237.0(1.9)	241.3(0.9)	246.1(1.1)
50	256.3(0.8)	257.6(1.3)	259.2(2.0)	264.5(1.1)	267.8(1.1)
75	282.9(0.7)	281.5(1.1)	282.3(1.9)	287.0(1.7)	289.0(1.2)
90	306.6(0.9)	302.7(1.6)	302.2(1.9)	307.1(1.4)	307.1(1.6)
95	320.8(1.1)	316.2(1.7)	313.9(2.1)	319.4(1.3)	318.0(1.4)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors (continued)

	1977	1982	1986	1990	1992
BLACK STUDENTS					
Mean	208.1(2.4)	217.1(1.3)	221.6(2.5)	225.7(3.1)	224.4(2.7)
St. Dev.	39.7(0.9)	34.6(1.2)	33.0(0.9)	34.3(1.7)	37.1(1.3)
Percentiles					
5	144.3(3.2)	160.3(3.1)	167.8(1.7)	169.7(5.5)	162.1(3.7)
10	157.7(2.4)	173.0(3.1)	180.1(2.2)	181.8(6.1)	177.0(3.8)
25	180.5(2.2)	193.7(2.4)	198.3(3.0)	202.3(3.7)	198.9(3.6)
50	207.4(2.5)	216.8(1.3)	221.2(2.8)	225.7(3.0)	223.8(2.4)
75	234.8(2.6)	240.7(2.2)	243.5(3.6)	249.1(2.6)	251.4(3.6)
90	259.5(3.4)	262.2(3.5)	264.4(4.9)	269.0(4.2)	272.0(2.7)
95	274.6(2.7)	274.7(1.9)	276.8(2.5)	283.2(3.7)	286.0(7.6)
HISPANIC STUDENTS					
Mean	213.4(1.9)	225.5(3.9)	226.1(3.1)	231.6(2.6)	237.5(2.6)
St. Dev.	40.4(1.2)	36.2(1.1)	34.2(1.2)	36.6(1.0)	34.0(1.2)
Percentiles					
5	147.1(3.5)	166.3(4.9)	171.1(5.6)	173.7(4.7)	180.3(3.7)
10	161.4(3.0)	179.4(4.1)	181.3(4.5)	185.3(4.5)	193.0(6.4)
25	185.8(3.5)	200.7(3.6)	201.6(5.5)	205.9(4.1)	215.2(3.8)
50	213.3(2.5)	225.9(4.4)	225.6(3.8)	230.9(3.3)	237.9(4.5)
75	240.3(3.5)	249.3(5.1)	249.8(3.4)	256.4(5.1)	260.9(3.4)
90	265.8(2.0)	271.2(5.1)	269.9(3.5)	280.0(5.9)	281.8(2.5)
95	282.1(4.4)	284.8(6.1)	283.0(3.8)	294.2(2.8)	292.1(4.2)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors

	1977	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	289.5(1.0)	283.3(1.2)	288.5(1.4)	290.4(1.1)	294.1(1.3)
St. Dev.	45.0(0.4)	46.7(0.7)	44.4(1.0)	46.2(0.6)	44.7(0.8)
Percentiles					
5	212.6(1.3)	203.2(2.2)	211.8(2.4)	209.9(2.3)	217.7(2.1)
10	231.3(1.4)	221.5(1.9)	229.5(2.4)	228.8(2.0)	234.2(2.5)
25	260.6(1.4)	252.5(2.1)	259.6(1.9)	260.3(1.9)	263.6(2.3)
50	290.8(1.0)	285.4(1.0)	290.1(1.9)	292.2(1.3)	295.9(1.5)
75	320.1(0.9)	315.3(1.6)	319.4(1.3)	322.7(1.4)	326.6(1.3)
90	346.2(1.1)	341.5(1.1)	344.5(1.9)	348.3(1.2)	350.3(1.9)
95	361.5(1.3)	357.3(1.4)	359.9(2.0)	362.9(1.5)	363.8(1.2)
MALE STUDENTS					
Mean	297.0(1.2)	291.9(1.4)	294.9(1.9)	295.6(1.3)	299.1(1.7)
St. Dev.	45.3(0.6)	47.1(0.9)	46.6(1.2)	48.7(0.9)	46.3(1.0)
Percentiles					
5	219.5(2.1)	210.3(2.3)	213.9(2.8)	210.4(3.9)	219.0(3.9)
10	238.2(1.6)	228.9(2.7)	231.4(5.0)	229.5(2.9)	235.5(4.2)
25	267.6(1.5)	261.1(1.9)	263.5(3.0)	263.4(1.3)	267.4(3.0)
50	298.5(1.2)	294.3(1.4)	298.7(2.8)	297.9(1.9)	301.3(2.2)
75	328.1(1.4)	324.8(2.0)	327.6(1.6)	329.9(1.8)	333.6(1.4)
90	353.9(1.4)	350.6(1.9)	353.4(2.8)	356.7(2.3)	357.2(1.0)
95	368.8(1.6)	365.3(1.3)	367.0(4.6)	372.5(1.8)	370.4(1.5)
FEMALE STUDENTS					
Mean	282.2(1.1)	275.2(1.3)	282.3(1.5)	285.4(1.6)	289.0(1.5)
St. Dev.	43.5(0.5)	44.8(0.8)	41.3(1.1)	43.2(1.0)	42.3(1.2)
Percentiles					
5	207.5(1.6)	198.3(3.6)	209.8(3.5)	209.2(3.7)	216.5(4.2)
10	226.1(2.1)	215.5(2.6)	228.1(2.0)	228.2(4.5)	232.9(2.8)
25	254.5(1.5)	245.7(2.1)	256.2(2.0)	257.7(2.4)	260.3(2.4)
50	283.8(1.2)	277.6(2.0)	283.7(1.4)	287.7(2.0)	290.9(2.1)
75	311.5(1.1)	306.2(1.2)	310.8(1.8)	316.2(2.3)	319.8(1.9)
90	336.3(1.2)	330.1(1.0)	333.5(3.0)	339.6(2.3)	341.4(1.9)
95	351.2(1.5)	345.2(1.5)	348.3(3.2)	351.5(1.6)	354.4(2.2)
WHITE STUDENTS					
Mean	297.7(0.7)	293.1(1.0)	297.5(1.7)	300.9(1.1)	304.2(1.3)
St. Dev.	40.5(0.3)	41.6(0.5)	40.6(1.0)	41.1(0.6)	40.6(0.9)
Percentiles					
5	231.1(0.9)	223.0(1.7)	228.3(2.9)	232.8(2.3)	234.3(3.9)
10	246.0(0.7)	239.1(1.5)	244.5(3.1)	249.0(2.0)	251.3(2.5)
25	270.3(0.8)	265.5(1.5)	271.0(2.0)	273.4(1.5)	276.8(2.2)
50	297.5(0.7)	293.6(1.0)	298.7(1.7)	301.2(1.2)	306.0(1.5)
75	325.0(0.9)	321.2(1.6)	324.9(1.3)	329.0(1.6)	333.0(1.7)
90	349.9(1.0)	346.0(1.3)	348.9(3.0)	352.3(1.3)	355.1(1.5)
95	364.6(1.4)	360.8(1.3)	363.5(2.8)	367.3(2.0)	368.5(0.9)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Science Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of science distributions with jackknifed standard errors (continued)

	1977	1982	1986	1990	1992
BLACK STUDENTS					
Mean	240.2(1.5)	234.7(1.7)	252.8(2.9)	253.0(4.5)	256.2(3.2)
St. Dev.	41.6(0.9)	41.8(1.3)	40.4(2.2)	44.7(2.4)	39.4(1.4)
Percentiles					
5	172.4(1.5)	166.0(3.1)	189.3(4.8)	182.0(10.1)	191.8(4.0)
10	187.3(1.9)	180.6(3.5)	201.6(4.9)	196.6(3.1)	206.6(4.1)
25	212.1(1.4)	206.4(3.2)	225.0(4.2)	220.5(4.3)	230.1(1.7)
50	240.4(1.8)	234.7(3.0)	251.9(5.9)	251.6(3.0)	255.4(3.2)
75	267.9(2.0)	262.7(2.2)	279.5(3.4)	282.9(6.0)	282.4(5.9)
90	293.4(2.6)	288.8(3.9)	306.0(4.2)	313.6(11.3)	308.2(10.3)
95	309.6(2.6)	305.4(1.6)	322.8(5.8)	329.3(10.2)	324.8(8.7)
HISPANIC STUDENTS					
Mean	262.3(2.2)	248.7(2.3)	259.3(3.8)	261.5(4.4)	270.2(5.6)
St. Dev.	41.8(1.5)	43.4(2.3)	39.3(1.7)	44.1(2.6)	41.6(2.0)
Percentiles					
5	193.7(5.2)	178.0(6.1)	194.4(9.3)	188.7(6.2)	196.6(10.5)
10	208.4(4.0)	194.2(7.2)	209.2(3.8)	203.9(11.1)	215.4(14.6)
25	234.3(3.9)	218.8(3.3)	232.0(5.6)	230.6(3.6)	241.6(8.6)
50	262.4(2.4)	248.0(2.5)	258.9(5.8)	260.5(5.7)	272.7(11.0)
75	289.5(5.1)	278.4(3.4)	285.8(3.6)	292.6(10.6)	297.9(2.8)
90	316.9(4.4)	302.1(3.4)	309.9(7.6)	317.4(5.1)	322.8(6.7)
95	331.3(4.4)	320.8(11.0)	324.4(6.3)	329.5(9.1)	339.1(6.0)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Animals communicate	1992	82.3(1.3)	83.1(1.8)	81.5(1.4)	86.5(1.4)	68.4(2.4)	70.8(3.4)
	1990	83.4(1.1)	83.7(1.5)	83.2(1.5)	87.9(1.1)	67.4(3.4)	73.3(4.5)
	1986	77.8(1.7)	78.7(1.7)	76.9(2.1)	81.8(1.9)	61.4(3.1)	66.5(3.7)
	1977	73.5(1.4)	74.2(1.7)	72.8(1.8)	78.0(1.5)	49.3(2.8)	68.4(4.7)
Water evaporation: Put in sun	1992	46.4(1.3)	49.3(1.7)	43.8(1.7)	47.6(1.7)	42.2(2.3)	41.8(3.6)
	1990	45.6(1.2)	48.6(1.6)	42.7(1.9)	46.3(1.3)	40.3(3.5)	45.6(4.9)
	1986	42.4(1.4)	44.6(1.7)	40.4(2.2)	43.6(1.7)	37.0(3.0)	40.5(6.7)
	1977	53.7(1.5)	54.3(1.7)	53.1(2.1)	56.3(1.7)	40.7(2.5)	48.0(3.9)
Water evaporation: Cover jar	1992	41.5(1.2)	45.0(1.5)	38.3(1.7)	42.9(1.6)	36.2(2.0)	34.4(3.8)
	1990	43.3(1.2)	45.2(1.8)	41.4(2.1)	44.9(1.3)	38.6(2.6)	33.5(4.1)
	1986	40.7(1.4)	42.0(2.0)	39.4(1.7)	41.9(1.7)	36.6(3.3)	34.5(4.8)
	1977	49.9(1.4)	52.3(1.8)	47.6(1.5)	51.7(1.5)	41.1(2.5)	48.8(3.6)
Finding cause of a sore throat	1992	68.6(1.3)	64.8(1.7)	72.1(1.7)	70.1(1.5)	64.2(2.4)	63.6(6.4)
	1990	70.8(1.3)	66.1(2.0)	75.3(1.5)	73.4(1.4)	63.6(4.2)	66.4(3.6)
	1986	69.0(1.4)	64.3(1.9)	73.4(1.9)	71.9(1.4)	58.5(2.4)	59.6(6.6)
	1982	64.1(1.3)	61.2(1.6)	67.1(2.0)	66.2(1.6)	59.0(2.7)	50.0(3.1)
	1977	53.9(1.3)	52.6(2.1)	55.2(1.8)	55.1(1.5)	47.1(2.2)	53.6(3.2)
Predator-prey: Deer/Mt. Lions	1992	67.3(1.4)	70.2(1.9)	64.7(1.7)	70.1(1.5)	56.6(3.1)	56.8(4.4)
	1990	69.4(1.1)	70.2(1.6)	68.8(1.6)	73.2(1.1)	54.6(2.8)	61.5(4.1)
	1986	62.3(1.4)	62.3(2.1)	62.4(2.3)	66.4(1.8)	47.9(2.8)	47.5(4.2)
	1977	65.4(1.6)	66.5(2.1)	64.3(2.1)	69.4(1.3)	42.5(5.2)	63.1(6.5)
See a doctor? Hurt arm	1992	88.1(1.0)	86.3(1.3)	89.7(1.1)	91.2(1.2)	78.1(2.1)	78.1(3.7)
	1990	88.1(1.0)	86.0(1.4)	90.0(1.3)	91.5(1.1)	75.7(3.1)	80.2(3.4)
	1986	86.7(1.1)	85.1(1.3)	88.2(1.3)	89.9(1.2)	75.9(2.8)	76.3(3.4)
	1977	90.9(0.8)	89.2(1.0)	92.7(1.0)	92.3(0.7)	86.5(2.2)	81.2(3.3)
See a doctor? Exercise	1992	80.8(1.2)	81.3(1.8)	80.4(1.3)	85.3(1.3)	65.1(2.7)	70.1(3.7)
	1990	82.7(1.2)	80.0(1.7)	85.3(1.3)	87.2(1.2)	65.2(3.1)	74.6(5.6)
	1986	79.6(1.2)	78.6(1.5)	80.6(1.4)	85.2(1.3)	55.5(2.6)	68.9(6.2)
	1977	76.0(1.1)	75.1(1.6)	76.9(1.4)	80.5(1.1)	57.3(3.2)	62.5(5.0)
See a doctor? Headache	1992	87.3(1.0)	85.1(1.3)	89.3(1.2)	88.4(1.2)	84.6(2.1)	83.9(4.0)
	1990	89.0(0.6)	87.1(1.1)	90.7(1.1)	89.7(0.7)	87.8(1.8)	85.2(3.6)
	1986	89.1(0.8)	88.0(1.2)	90.2(0.9)	89.9(0.8)	87.1(3.1)	85.0(1.5)
	1977	90.6(0.6)	90.4(1.0)	90.7(0.9)	91.3(0.6)	86.8(1.3)	87.4(2.8)
See a doctor? Stomachache	1992	77.7(1.4)	77.7(1.8)	77.6(1.5)	81.8(1.4)	63.6(3.6)	63.6(4.2)
	1990	77.3(1.0)	75.5(1.6)	79.0(1.4)	82.9(1.0)	58.2(2.9)	68.0(5.3)
	1986	75.6(1.3)	74.0(1.6)	77.2(1.8)	79.6(1.6)	59.6(3.1)	63.9(5.9)
	1977	69.2(1.5)	67.8(1.8)	70.6(1.9)	73.8(1.4)	46.8(4.0)	60.2(5.1)
See a doctor? Pain in side	1992	77.4(1.0)	74.2(1.3)	80.2(1.4)	79.9(1.0)	69.2(2.8)	71.3(4.2)
	1990	80.1(1.1)	76.9(1.5)	83.2(1.4)	82.4(1.1)	72.4(4.0)	75.0(3.7)
	1986	77.5(1.3)	74.5(2.1)	80.4(1.3)	80.6(1.6)	66.7(2.8)	68.6(2.3)
	1977	80.4(1.1)	78.7(1.6)	82.0(1.4)	80.8(1.1)	78.1(2.8)	76.6(4.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Balloon shape and volume	1992	60.8(1.9)	61.8(2.5)	59.8(1.9)	65.3(2.0)	45.3(2.9)	48.9(5.2)
	1990	58.2(1.4)	58.8(1.9)	57.7(1.8)	62.3(1.5)	44.1(3.5)	40.8(5.1)
	1986	57.3(1.2)	59.4(1.9)	55.3(1.7)	60.2(1.5)	46.7(3.6)	46.3(5.9)
	1977	58.5(1.4)	58.7(2.0)	58.2(1.5)	63.7(1.3)	30.7(2.8)	49.4(4.7)
Determining the age of a tree	1992	60.0(1.6)	61.4(1.8)	58.7(1.8)	67.9(1.8)	31.1(3.4)	37.3(5.8)
	1990	64.0(1.9)	66.2(1.9)	62.0(2.5)	71.0(1.9)	42.2(4.8)	40.6(4.2)
	1986	55.7(1.8)	58.2(2.3)	53.3(2.0)	62.1(1.9)	34.8(3.3)	32.7(3.8)
	1977	61.6(1.9)	64.6(2.0)	58.6(2.1)	68.1(1.7)	34.1(3.0)	37.2(5.0)
Garden loses nutrients	1992	51.7(1.4)	52.0(1.8)	51.3(1.8)	58.4(1.7)	28.8(2.0)	30.1(3.6)
	1990	55.5(1.5)	54.7(1.9)	56.2(2.3)	63.4(1.7)	31.2(3.5)	33.1(4.3)
	1986	54.3(1.3)	56.2(1.9)	52.5(1.7)	61.3(1.4)	30.5(3.0)	27.9(3.7)
	1982	54.3(1.6)	55.1(2.2)	53.5(2.0)	59.6(1.6)	32.6(1.9)	34.0(3.3)
	1977	56.3(1.7)	57.4(1.9)	55.2(2.4)	62.9(1.5)	28.5(3.8)	31.4(3.9)
How to care for a bleeding cut	1992	51.5(1.3)	51.7(1.9)	51.3(1.5)	54.0(1.4)	43.9(3.0)	41.2(3.3)
	1990	48.2(1.4)	51.5(2.1)	45.1(1.8)	49.5(1.6)	40.9(3.5)	51.3(4.2)
	1986	39.9(1.4)	36.7(1.6)	42.9(1.8)	41.5(1.5)	35.3(3.3)	32.5(4.5)
	1982	46.2(1.8)	46.2(2.3)	46.1(2.0)	47.8(2.1)	38.7(2.3)	43.5(5.2)
	1977	34.9(1.8)	38.3(2.3)	31.3(2.0)	35.2(2.0)	31.0(4.3)	41.3(5.1)
Selecting a balanced diet	1992	53.3(1.7)	49.0(2.0)	57.3(2.0)	57.2(2.0)	40.9(4.1)	39.1(5.8)
	1990	55.0(1.5)	51.1(2.0)	58.6(2.0)	58.6(1.7)	42.8(3.3)	42.3(3.4)
	1986	51.3(1.4)	46.6(2.3)	55.8(1.9)	54.3(1.6)	38.9(3.2)	44.6(6.1)
	1982	51.5(1.5)	47.6(2.1)	55.5(1.9)	54.2(1.7)	38.5(3.4)	45.3(5.1)
	1977	46.2(1.5)	44.6(1.8)	47.9(2.2)	50.2(1.6)	28.4(2.9)	29.8(4.5)
Parental care by mammals	1992	51.4(1.6)	54.6(2.2)	48.4(1.9)	52.3(1.8)	47.1(3.2)	50.7(4.4)
	1990	48.3(1.5)	50.2(1.9)	46.5(1.9)	48.9(1.8)	43.3(3.0)	55.1(4.0)
	1986	43.1(1.4)	45.0(2.1)	41.2(1.7)	43.9(1.8)	38.2(3.7)	40.4(5.0)
	1977	42.9(1.4)	44.1(1.8)	41.6(2.0)	43.2(1.6)	44.0(2.8)	38.2(5.6)
Plants bend toward light	1992	28.3(0.9)	29.3(1.1)	27.3(1.3)	29.7(1.1)	23.2(2.1)	22.6(2.6)
	1990	27.5(1.3)	27.5(1.8)	27.6(1.7)	29.2(1.6)	20.3(2.7)	29.8(3.9)
	1986	25.6(1.5)	27.7(1.9)	23.7(1.9)	27.6(1.7)	17.2(2.4)	23.3(5.5)
	1977	29.8(1.3)	31.2(1.5)	28.4(1.7)	30.6(1.6)	27.9(3.1)	23.5(4.6)
Life cycle or a butterfly	1992	52.8(1.5)	54.2(2.1)	51.5(1.7)	56.8(1.6)	39.0(2.7)	34.5(4.3)
	1990	49.6(1.4)	51.4(2.1)	47.[illegible](1.9)	53.3(1.5)	36.2(2.6)	43.5(4.4)
	1986	43.5(1.4)	46.8(1.9)	40.3([illegible].8)	46.3(1.6)	33.3(3.2)	39.4(5.6)
	1977	30.4(1.6)	33.2(1.9)	27.6(1.7)	32.3(1.8)	21.7(2.0)	25.2(4.2)
Position of fulcrum	1992	61.2(1.3)	67.4(1.6)	55.6(1.5)	63.4(1.4)	53.0(2.2)	57.2(3.6)
	1990	62.8(1.2)	67.3(1.6)	58.3(1.8)	63.5(1.3)	61.2(3.0)	61.2(4.7)
	1986	65.1(1.5)	68.9(1.7)	61.5(2.2)	65.6(1.7)	61.7(2.7)	68.3(3.8)
	1977	74.3(1.0)	78.6(1.2)	70.0(1.4)	74.9(1.1)	70.5(2.2)	74.7(3.8)
Use of a telescope	1992	81.5(1.2)	86.6(1.2)	76.9(1.7)	85.2(1.3)	68.6(2.8)	67.5(3.9)
	1990	83.1(1.5)	85.5(1.7)	80.6(1.8)	86.6(1.0)	72.1(4.8)	72.7(4.2)
	1986	82.2(1.4)	85.8(1.4)	78.7(1.8)	85.4(1.6)	71.5(2.1)	73.2(3.5)
	1977	70.5(1.6)	74.2(2.0)	66.8(1.9)	74.6(1.7)	46.7(3.2)	65.5(4.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Cycler's movement: Bike	1992	10.3(0.7)	11.1(1.1)	9.6(0.9)	11.3(0.9)	6.4(1.2)	10.6(2.8)
	1990	8.1(0.9)	8.9(1.1)	7.3(1.0)	8.0(1.1)	7.3(2.0)	7.3(1.5)
	1986	9.0(0.8)	10.6(1.1)	7.4(1.1)	9.4(1.1)	7.3(2.4)	9.7(2.3)
	1977	7.4(0.6)	7.2(0.7)	7.5(0.8)	6.9(0.6)	7.5(1.5)	10.7(2.4)
Cycler's movement: Tree	1992	61.7(1.3)	62.5(1.6)	61.0(1.6)	61.7(1.7)	61.0(2.3)	63.3(3.7)
	1990	61.9(1.3)	61.3(1.9)	62.6(1.9)	61.7(1.4)	60.8(3.4)	66.4(3.5)
	1986	62.2(1.3)	63.8(2.3)	60.5(1.8)	62.6(1.6)	60.5(3.0)	61.1(3.5)
	1977	64.7(1.2)	64.5(1.7)	65.0(1.5)	64.3(1.4)	61.4(2.9)	79.9(2.7)
Cycler's movement: House	1992	60.1(1.1)	60.7(1.9)	59.6(1.3)	62.0(1.3)	54.6(2.7)	51.1(7.7)
	1990	58.8(1.3)	58.9(2.1)	58.6(1.6)	60.5(1.7)	50.3(3.6)	62.0(3.5)
	1986	60.7(1.1)	61.9(1.7)	59.6(1.6)	62.4(1.2)	55.4(3.5)	55.6(4.1)
	1977	63.0(1.2)	63.3(1.7)	62.6(1.6)	64.0(1.3)	59.0(4.0)	53.8(3.9)
Circuit: Positive	1992	67.9(1.4)	73.9(1.2)	62.5(1.9)	71.2(1.5)	55.8(3.2)	57.0(5.3)
	1990	66.7(1.6)	73.2(1.8)	60.1(2.2)	68.8(1.7)	56.2(3.6)	66.2(3.8)
	1986	64.5(1.5)	72.8(1.9)	56.4(1.9)	65.8(1.6)	58.2(2.7)	58.8(1.9)
	1977	66.2(1.3)	71.8(2.2)	60.6(1.6)	69.8(1.2)	56.5(2.7)	58.3(7.3)
Circuit: Positive/negative	1992	76.7(1.0)	81.9(1.1)	72.0(1.4)	78.7(1.2)	67.9(2.5)	77.0(2.8)
	1990	76.3(1.4)	80.6(1.8)	71.9(1.9)	77.7(1.6)	67.5(3.3)	77.1(3.1)
	1986	76.3(1.2)	80.1(1.5)	72.7(2.0)	77.6(1.2)	72.0(2.1)	69.7(3.4)
	1977	75.5(1.3)	78.5(1.8)	72.6(1.6)	77.8(1.4)	61.5(3.1)	76.2(5.3)
Circuit: Positive/positive	1992	67.0(1.5)	72.6(1.5)	61.9(2.0)	68.8(1.7)	59.8(2.7)	57.7(2.6)
	1990	67.1(1.5)	72.4(1.8)	61.8(1.8)	68.1(1.8)	61.4(2.6)	69.1(4.5)
	1986	67.9(1.3)	72.4(1.9)	63.6(1.9)	69.3(1.6)	61.1(3.0)	63.7(4.1)
	1977	63.3(1.4)	66.5(2.1)	60.2(1.8)	64.2(1.6)	59.0(3.0)	59.1(6.4)
Circuit: Closed	1992	48.5(0.9)	55.9(1.5)	41.9(1.2)	50.0(1.1)	42.6(2.2)	42.9(3.4)
	1990	50.7(1.7)	56.8(2.0)	44.6(2.2)	52.5(1.9)	42.7(3.6)	47.5(2.9)
	1986	51.0(1.0)	59.6(1.3)	42.7(1.5)	51.2(1.4)	50.2(3.2)	51.6(4.2)
	1977	56.7(1.3)	64.5(1.9)	49.0(1.5)	58.1(1.3)	47.3(2.9)	54.6(5.4)
Balloon: Volume & temperature	1992	45.1(1.1)	47.6(1.8)	42.9(1.6)	48.0(1.4)	33.9(2.3)	40.3(3.3)
	1990	41.7(1.5)	44.8(2.2)	38.5(1.9)	44.1(1.7)	27.5(3.0)	42.9(4.4)
	1986	40.4(1.4)	47.6(1.9)	33.4(1.9)	41.9(1.7)	35.5(1.8)	34.2(4.9)
	1977	52.3(1.5)	55.0(2.0)	49.7(2.0)	55.4(1.7)	39.7(3.8)	44.3(4.5)
Electrical conductor: Rubber	1992	80.1(1.0)	82.0(1.2)	78.3(1.4)	83.3(1.0)	67.1(2.2)	75.7(3.3)
	1990	78.8(1.5)	79.8(1.9)	77.7(1.9)	81.3(1.6)	66.6(3.7)	72.2(5.5)
	1986	80.1(1.2)	81.5(1.3)	78.7(1.7)	83.3(1.4)	69.0(2.7)	70.0(3.0)
	1977	78.4(1.0)	79.7(1.1)	77.1(1.6)	81.8(1.0)	61.4(2.3)	68.8(4.2)
Electrical conductor: Copper	1992	83.6(0.8)	85.8(0.9)	81.6(1.1)	85.6(0.9)	76.2(1.8)	78.1(3.1)
	1990	81.8(1.1)	84.7(1.3)	78.9(1.5)	83.9(1.2)	71.8(4.0)	77.1(2.9)
	1986	83.7(1.1)	84.8(1.5)	82.6(1.3)	85.6(1.2)	78.7(2.8)	73.6(3.5)
	1977	80.7(1.0)	83.0(1.2)	78.3(1.5)	83.8(1.2)	66.3(2.9)	68.0(3.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Electrical conductor: Foil	1992	46.1(1.2)	48.0(1.7)	44.4(1.4)	47.9(1.3)	39.6(3.5)	38.0(4.3)
	1990	38.1(1.7)	38.7(2.1)	37.5(2.2)	38.3(2.0)	33.7(3.4)	45.5(3.2)
	1986	37.0(1.6)	37.9(1.9)	36.0(2.0)	38.1(2.0)	32.7(3.1)	31.1(5.2)
	1977	36.0(1.4)	38.7(1.7)	33.3(1.8)	35.9(1.7)	38.7(2.5)	31.5(4.9)
Electrical conductor: Penny	1992	32.4(1.0)	33.5(1.4)	31.3(1.3)	33.6(1.2)	26.6(2.7)	27.0(3.6)
	1990	31.4(1.4)	32.5(1.9)	30.3(1.9)	33.7(1.7)	22.7(2.9)	31.3(4.0)
	1986	28.9(1.0)	30.8(1.5)	27.0(1.3)	31.2(1.1)	19.7(1.8)	22.2(4.6)
	1977	35.8(1.3)	38.8(1.6)	32.8(1.8)	36.0(1.4)	35.2(4.6)	30.8(4.1)
Electrical conductor: Cork	1992	67.1(1.4)	72.4(1.4)	62.4(2.0)	72.7(1.4)	47.7(3.2)	53.7(4.1)
	1990	65.7(1.5)	72.2(1.7)	59.2(1.9)	72.1(1.5)	43.7(2.5)	48.2(4.6)
	1986	69.8(1.6)	75.4(2.0)	64.4(1.8)	74.2(1.7)	54.0(2.8)	56.6(4.3)
	1977	72.5(1.1)	77.5(1.6)	67.6(1.4)	77.8(1.1)	50.5(3.0)	56.5(4.9)
Sun is a star	1992	69.7(1.6)	75.7(1.6)	64.3(1.9)	74.5(1.5)	53.4(3.9)	54.1(4.2)
	1990	64.3(1.7)	66.6(1.9)	62.0(2.1)	69.2(1.8)	41.3(3.6)	56.8(4.0)
	1986	61.6(1.7)	66.9(2.0)	56.5(2.2)	65.1(1.7)	47.5(4.3)	55.8(4.3)
	1982	52.3(1.7)	57.3(1.8)	47.3(2.5)	56.9(2.2)	33.5(3.3)	36.6(5.5)
	1977	50.2(2.0)	53.2(2.4)	47.2(2.4)	53.8(2.2)	33.8(2.5)	34.3(7.7)
Objects that conduct heat	1992	62.2(1.3)	63.0(1.5)	61.5(1.8)	64.6(1.4)	54.4(3.2)	52.1(4.8)
	1990	55.8(1.9)	57.0(2.5)	54.5(2.0)	58.0(2.2)	45.3(2.9)	54.2(3.6)
	1986	59.2(1.4)	60.5(1.9)	58.1(1.8)	62.7(1.6)	48.4(3.3)	46.8(4.7)
	1977	46.7(1.5)	48.4(2.0)	44.9(2.2)	49.8(1.5)	35.2(2.9)	31.9(4.1)
Planting to avoid erosion	1992	37.5(1.6)	37.0(2.1)	37.9(1.9)	38.1(1.8)	32.1(2.8)	39.8(3.9)
	1990	36.4(1.9)	36.8(2.1)	36.0(2.8)	36.5(2.4)	31.5(3.5)	39.3(4.6)
	1986	36.6(1.7)	38.2(2.1)	35.0(2.1)	36.2(1.9)	35.4(2.9)	41.4(4.4)
	1982	38.0(1.2)	36.9(1.8)	39.3(1.9)	38.4(1.4)	37.4(2.9)	35.4(3.7)
	1977	40.0(1.4)	38.8(1.8)	41.1(1.9)	41.2(1.5)	35.3(2.3)	32.3(4.9)
Length of shadows at noon	1992	31.1(1.4)	38.5(1.8)	24.4(2.0)	33.0(1.3)	22.4(2.9)	28.3(6.8)
	1990	28.3(1.5)	32.2(2.0)	24.3(1.6)	30.6(1.7)	18.8(3.5)	27.5(2.8)
	1986	29.9(1.6)	35.8(2.5)	24.3(1.5)	32.0(1.8)	21.5(2.7)	28.7(5.6)
	1977	29.7(1.5)	34.1(1.9)	25.3(1.7)	31.5(1.7)	22.0(2.3)	19.8(2.5)
Detect magnet through water	1992	44.9(1.2)	42.0(1.7)	47.6(1.6)	43.1(1.4)	52.7(2.5)	50.1(4.4)
	1990	49.3(1.3)	46.4(2.0)	52.3(1.5)	48.1(1.7)	54.7(2.3)	52.1(3.6)
	1986	49.1(1.5)	46.1(2.0)	51.9(2.1)	47.4(1.5)	56.1(3.8)	51.3(3.6)
	1977	51.3(1.3)	53.8(1.5)	48.9(2.1)	48.7(1.5)	62.7(2.8)	61.1(5.6)
Detect magnet through paper	1992	80.6(1.1)	85.2(1.4)	76.5(1.3)	82.5(1.2)	72.9(3.2)	77.9(4.1)
	1990	78.7(1.3)	84.2(1.6)	73.1(1.8)	79.0(1.4)	76.4(3.0)	83.2(3.9)
	1986	76.1(1.2)	82.8(1.6)	69.7(1.3)	76.9(1.4)	67.1(2.5)	88.3(3.3)
	1977	82.2(0.9)	88.1(1.0)	76.3(1.6)	83.3(1.0)	77.6(2.4)	76.7(4.4)
Detect magnet through glass	1992	49.7(1.3)	52.0(2.1)	47.7(1.4)	47.1(1.4)	60.3(2.9)	53.8(3.5)
	1990	52.1(1.5)	52.8(2.3)	51.3(1.5)	51.1(1.5)	54.3(4.8)	56.8(3.2)
	1986	45.9(1.6)	44.7(2.1)	47.1(2.0)	44.1(2.1)	54.1(2.0)	50.7(4.5)
	1977	38.4(1.0)	41.4(1.6)	35.4(1.4)	35.9(1.2)	52.7(1.9)	39.3(4.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Separating salt, sand, & water	1992	35.3(1.0)	37.8(1.5)	33.1(1.2)	38.0(1.0)	23.8(2.9)	31.5(4.5)
	1990	34.4(1.5)	33.7(1.6)	35.2(2.3)	36.7(1.6)	20.6(3.2)	32.3(4.6)
	1986	33.8(1.3)	36.6(2.1)	31.2(1.5)	36.4(1.6)	23.4(2.5)	26.1(3.3)
	1977	29.7(1.0)	31.5(1.5)	27.9(1.5)	32.4(1.2)	19.7(1.7)	17.3(3.1)
Acceleration of a marble	1992	23.1(1.0)	32.6(1.6)	14.4(1.0)	24.5(1.1)	20.2(2.1)	11.4(2.0)
	1990	23.8(1.2)	33.0(1.8)	14.4(1.6)	26.1(1.5)	15.6(2.1)	15.8(2.6)
	1986	21.3(1.2)	29.5(1.5)	13.3(1.6)	22.0(1.3)	18.3(2.6)	19.9(4.9)
	1977	25.6(1.1)	34.2(1.6)	17.0(1.3)	26.3(1.3)	23.1(2.5)	22.9(3.8)
Using a balance	1992	23.0(1.0)	20.3(1.4)	25.4(1.2)	22.7(0.9)	22.6(2.5)	27.3(4.6)
	1990	20.7(1.1)	17.9(1.4)	23.6(1.7)	20.3(1.2)	21.0(2.9)	22.0(2.8)
	1986	20.7(0.9)	20.6(1.3)	20.9(1.2)	20.5(1.1)	21.6(2.5)	22.3(3.1)
	1977	17.4(1.0)	13.8(1.3)	21.1(1.4)	17.7(1.1)	17.5(2.4)	13.1(2.8)
Reading a histogram	1992	98.0(0.3)	97.8(0.4)	98.2(0.3)	98.1(0.3)	97.5(0.8)	98.0(0.6)
	1990	98.8(0.2)	98.9(0.4)	98.8(0.3)	98.9(0.2)	98.3(0.8)	99.0(0.6)
	1986	97.6(0.4)	97.6(0.5)	97.6(0.6)	97.9(0.4)	97.8(0.9)	94.9(3.5)
	1977	92.4(1.0)	92.8(0.9)	92.0(1.3)	93.7(1.0)	83.8(1.8)	93.2(2.0)
Using a grid to locate objects	1992	97.4(0.3)	97.1(0.5)	97.7(0.4)	97.8(0.3)	95.9(0.9)	95.8(1.4)
	1990	97.8(0.4)	97.5(0.6)	98.1(0.4)	98.2(0.4)	96.4(1.4)	95.6(1.5)
	1986	96.3(0.5)	96.2(0.6)	96.4(0.7)	97.0(0.5)	95.6(1.0)	91.2(3.4)
	1977	90.6(1.1)	91.1(1.2)	90.1(1.5)	94.0(0.6)	74.9(4.5)	80.4(4.3)
Water level in u-tube	1992	89.7(0.7)	91.3(0.8)	88.1(1.0)	91.1(0.8)	84.1(2.1)	86.0(1.9)
	1990	88.3(0.8)	87.9(1.3)	88.6(1.0)	91.7(0.7)	75.8(2.5)	81.0(2.9)
	1986	90.3(0.9)	92.0(0.9)	88.4(1.4)	91.8(1.0)	83.2(1.8)	87.3(3.5)
	1977	87.8(1.1)	90.1(1.2)	85.3(1.5)	90.8(0.9)	71.0(4.0)	85.8(2.7)
Water level in unequal u-tube	1992	75.3(0.9)	76.3(1.3)	74.3(1.4)	77.1(1.1)	66.9(2.5)	72.4(2.0)
	1990	73.9(1.1)	75.7(1.1)	72.0(1.7)	77.1(1.0)	62.6(3.9)	69.4(2.8)
	1986	74.9(1.4)	77.7(1.5)	71.8(1.6)	77.9(1.5)	59.5(2.8)	73.4(3.4)
	1977	72.6(1.5)	75.1(1.6)	69.9(2.1)	76.9(1.4)	49.5(3.1)	66.2(4.3)
Floating and sinking blocks	1992	78.5(1.1)	81.2(1.2)	75.8(1.6)	82.4(1.1)	64.5(2.3)	67.6(2.2)
	1990	77.6(1.2)	77.9(1.8)	77.3(1.4)	82.7(1.1)	60.5(3.8)	61.6(4.1)
	1986	76.8(1.2)	79.5(1.5)	73.8(1.7)	80.8(1.4)	61.0(2.7)	64.9(5.9)
	1977	68.8(1.6)	68.9(1.8)	68.8(2.2)	73.2(1.5)	47.6(4.4)	58.0(4.5)
Balancing a seesaw	1992	62.9(1.1)	64.2(1.4)	61.6(1.6)	66.5(1.3)	54.3(3.4)	45.3(7.0)
	1990	65.3(1.4)	66.0(1.8)	64.6(1.8)	68.7(1.7)	53.3(3.8)	50.6(4.1)
	1986	58.9(1.3)	59.3(1.7)	58.4(1.9)	61.1(1.3)	48.5(3.4)	59.0(6.2)
	1977	58.5(1.5)	60.7(1.7)	56.0(2.0)	60.5(1.5)	46.5(3.4)	56.0(4.7)
Dog experiment: Any dog learns	1992	67.3(1.1)	65.1(1.6)	69.5(1.6)	70.2(1.2)	58.9(3.4)	52.6(2.8)
	1990	66.1(1.5)	64.0(1.7)	68.2(1.9)	70.4(1.4)	51.6(4.4)	50.7(3.9)
	1986	61.0(1.4)	58.4(1.5)	63.9(2.3)	65.3(1.7)	45.9(3.2)	49.4(3.8)
	1977	62.9(1.5)	62.2(1.7)	63.5(2.0)	67.0(1.5)	43.3(3.5)	52.3(5.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Dog experiment: Some dogs learn	1992	90.4(0.7)	90.1(0.9)	90.7(1.1)	93.1(0.7)	82.4(3.4)	79.7(3.9)
	1990	90.4(0.9)	89.4(1.2)	91.3(1.1)	93.9(0.6)	79.4(2.8)	80.8(4.5)
	1986	89.0(1.0)	90.0(0.9)	87.9(1.5)	92.0(0.9)	82.2(2.5)	73.7(3.7)
	1977	89.7(1.0)	89.5(1.2)	89.9(1.1)	92.8(0.6)	79.2(2.5)	72.1(5.3)
Dog experiment: Teach any dog	1992	63.1(1.3)	66.0(1.5)	60.0(2.1)	65.3(1.5)	59.0(3.5)	52.7(6.6)
	1990	63.1(1.5)	64.4(1.8)	61.7(1.8)	65.8(1.4)	59.3(3.8)	48.8(4.6)
	1986	62.9(1.5)	65.5(1.8)	60.1(2.4)	65.2(1.5)	59.3(3.5)	49.2(3.9)
	1977	60.5(1.6)	63.8(2.1)	57.4(2.0)	62.1(1.5)	54.4(3.0)	51.1(4.8)
Relating speed of car/train	1992	50.0(1.0)	57.6(1.5)	42.2(1.7)	55.0(1.2)	31.0(3.0)	40.5(4.5)
	1990	48.4(1.5)	53.1(2.1)	43.8(2.2)	54.5(1.5)	26.7(2.0)	29.9(4.4)
	1986	49.4(1.3)	57.2(2.0)	40.9(1.5)	53.5(1.5)	32.3(2.5)	38.7(4.0)
	1977	50.7(1.9)	55.1(2.4)	46.1(1.9)	54.5(1.9)	29.8(2.9)	41.1(6.5)
Classifying objects: Shape	1992	76.8(1.1)	74.9(1.1)	78.7(1.5)	80.1(1.2)	64.8(2.4)	66.0(3.2)
	1990	74.5(1.2)	71.7(1.6)	77.3(1.5)	78.2(1.4)	61.8(2.7)	64.8(3.1)
	1986	71.8(1.3)	69.8(1.6)	74.0(1.5)	75.5(1.5)	60.0(3.1)	57.1(2.6)
	1982	74.5(1.4)	71.8(2.0)	77.4(1.8)	76.7(1.6)	65.0(3.5)	65.9(4.6)
	1977	70.2(1.2)	70.1(1.6)	70.4(1.4)	73.6(1.4)	56.8(2.4)	55.3(3.7)
Classifying objects: Color	1992	83.3(0.7)	81.5(1.0)	85.1(1.1)	85.9(0.8)	76.3(2.4)	70.9(2.8)
	1990	81.1(1.1)	79.9(1.3)	82.2(1.4)	83.0(1.4)	74.6(2.8)	73.4(3.9)
	1986	77.6(1.4)	76.6(1.5)	78.7(1.7)	80.2(1.3)	71.1(3.2)	62.7(7.8)
	1982	74.8(1.5)	71.7(2.1)	78.0(1.5)	77.5(1.6)	64.8(2.3)	62.9(4.5)
	1977	71.6(1.3)	71.7(1.5)	71.5(1.7)	74.6(1.2)	60.3(3.1)	57.6(5.7)
Classifying Objects: Size	1992	75.6(0.9)	73.5(1.2)	77.7(1.2)	78.5(1.0)	63.9(2.7)	70.2(3.9)
	1990	75.6(1.2)	73.1(1.8)	78.2(1.5)	79.4(1.4)	63.7(2.8)	61.2(4.2)
	1986	71.1(1.2)	70.3(1.5)	71.9(1.7)	74.9(1.3)	59.4(3.5)	53.7(3.6)
	1982	69.0(1.5)	66.4(1.9)	71.6(2.6)	71.9(1.7)	55.9(2.1)	59.1(4.1)
	1977	66.8(1.3)	66.9(1.7)	66.8(1.7)	70.6(1.4)	53.7(2.5)	47.7(4.4)
Magnetism: Copper	1992	51.0(1.4)	57.5(1.5)	44.4(2.0)	54.3(1.6)	38.1(3.8)	40.0(2.7)
	1990	51.0(1.3)	60.8(1.9)	41.5(2.0)	52.6(1.6)	46.1(3.8)	38.6(5.0)
	1986	54.8(1.5)	60.6(1.9)	48.4(2.1)	57.0(1.8)	44.2(3.8)	52.2(3.7)
	1977	46.5(1.6)	55.4(2.0)	37.7(2.0)	48.6(1.9)	37.2(2.8)	40.2(4.7)
Magnetism: Compass	1992	34.1(1.4)	39.9(2.0)	28.1(1.8)	34.0(1.6)	33.4(3.1)	33.1(5.5)
	1990	33.6(1.1)	40.8(1.8)	26.5(1.5)	33.9(1.2)	30.7(2.9)	29.4(2.5)
	1986	35.1(1.6)	40.6(2.2)	29.1(2.0)	35.8(2.0)	30.8(3.1)	36.0(3.4)
	1977	38.8(1.4)	49.1(1.9)	28.7(1.6)	40.0(1.5)	36.1(3.8)	29.6(4.3)
Magnetism: Iron	1992	78.8(1.0)	81.3(1.1)	76.2(1.3)	81.1(1.2)	73.4(2.3)	68.4(5.7)
	1990	78.0(1.5)	80.0(1.5)	76.0(1.8)	80.6(1.2)	70.1(5.0)	60.5(4.1)
	1986	78.4(0.9)	80.7(1.3)	75.8(1.1)	79.8(1.0)	78.1(2.2)	63.7(3.9)
	1977	73.6(1.1)	77.1(1.6)	70.1(1.5)	74.2(1.2)	71.3(3.0)	70.2(4.2)
Magnetism: Foil	1992	67.1(1.3)	70.8(1.4)	63.4(1.7)	70.9(1.3)	57.5(2.3)	50.8(5.4)
	1990	69.7(1.2)	71.1(1.6)	68.3(1.9)	73.5(1.2)	55.7(3.1)	57.4(3.7)
	1986	71.6(1.2)	73.2(1.6)	69.8(1.6)	74.1(1.4)	63.7(2.6)	60.7(7.0)
	1977	67.1(1.3)	68.7(1.7)	65.6(1.7)	70.5(1.3)	54.1(2.7)	58.6(3.6)

The standard errors of the estimated percentages appear in parentheses

NAEP 1992 National Science Trend Assessment — Age 9

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Interpret table of books read	1992	64.1(1.4)	63.7(1.5)	64.5(1.8)	68.9(1.5)	46.9(3.0)	46.4(3.7)
	1990	63.6(1.4)	62.3(1.9)	64.8(2.0)	68.8(1.3)	47.7(3.2)	41.4(3.6)
	1986	61.3(1.5)	59.2(1.9)	63.6(2.1)	66.5(1.7)	44.1(3.2)	42.3(5.1)
	1982	57.1(1.6)	54.2(1.8)	60.0(2.1)	62.3(2.0)	36.3(2.2)	27.5(4.5)
	1977	60.2(1.9)	58.9(2.1)	61.5(2.3)	65.9(1.7)	35.3(4.0)	33.9(3.8)
Survey height of boys/girls	1992	50.9(1.3)	54.9(1.7)	46.8(1.7)	51.4(1.6)	52.0(2.7)	45.5(3.5)
	1990	52.0(1.6)	54.5(1.9)	49.5(2.1)	52.8(1.4)	49.9(4.8)	47.2(4.1)
	1986	51.3(1.3)	52.8(1.8)	49.7(2.6)	52.7(1.5)	48.6(4.2)	42.0(6.1)
	1982	51.7(1.6)	54.8(2.0)	48.6(2.6)	53.0(1.9)	48.5(4.2)	44.2(3.0)
	1977	47.0(1.5)	48.8(1.8)	45.2(1.9)	48.6(1.7)	38.1(2.3)	44.7(2.7)
Add heat to dissolve sugar	1992	36.3(1.1)	37.3(1.5)	35.4(1.7)	40.4(1.2)	21.0(2.0)	23.8(3.7)
	1990	39.7(1.3)	38.9(1.5)	40.6(2.1)	43.5(1.5)	26.9(2.9)	25.7(2.9)
	1986	42.7(1.3)	42.3(1.8)	43.1(1.9)	46.1(1.8)	28.7(3.2)	33.5(5.1)
	1977	38.4(1.5)	38.4(2.0)	38.4(1.6)	42.1(1.6)	20.8(3.0)	27.3(2.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Finding cause of a sore throat	1992	80.0(1.2)	75.2(1.5)	85.2(1.4)	83.0(1.1)	72.0(3.2)	70.0(6.0)
	1990	80.8(1.1)	76.5(1.5)	84.9(1.6)	83.6(1.3)	71.8(3.7)	69.8(3.0)
	1986	78.6(1.7)	73.6(2.2)	83.6(1.5)	80.3(2.2)	71.7(2.6)	71.6(3.8)
	1982	74.7(2.0)	71.9(2.6)	77.3(2.1)	76.0(2.1)	70.2(4.0)	65.6(4.4)
	1977	75.0(1.3)	73.0(1.8)	77.1(1.5)	76.1(1.4)	73.2(2.2)	65.2(5.1)
Plants bend toward light	1992	62.5(1.8)	65.4(2.3)	59.5(2.1)	67.3(1.9)	45.4(4.2)	52.8(4.8)
	1990	61.0(1.4)	62.5(1.4)	59.5(2.0)	66.6(1.5)	41.0(4.0)	47.2(3.7)
	1986	54.5(2.9)	55.5(2.0)	53.6(4.3)	58.7(3.3)	38.7(3.5)	42.9(4.9)
	1982	55.4(1.7)	56.8(1.9)	54.1(2.3)	60.0(1.9)	36.1(3.5)	38.0(5.2)
	1977	53.3(1.8)	54.8(2.1)	51.7(2.3)	58.1(2.0)	29.3(2.6)	39.7(4.6)
Dog related to wolf	1992	95.0(0.6)	96.5(0.5)	93.3(0.9)	97.5(0.4)	85.5(2.3)	91.2(2.9)
	1990	94.4(0.6)	96.2(0.6)	92.7(1.0)	96.1(0.6)	88.1(1.9)	91.8(2.4)
	1986	95.7(0.6)	96.6(0.6)	94.8(0.9)	97.3(0.7)	89.8(1.4)	91.7(1.9)
	1977	94.0(0.7)	94.8(0.7)	93.1(0.9)	95.7(0.6)	85.9(2.4)	88.7(2.0)
Observing a sealed aquarium	1992	63.6(1.2)	66.2(1.6)	60.9(1.9)	65.2(1.4)	56.9(3.3)	57.0(2.8)
	1990	64.9(1.3)	67.5(1.6)	62.3(1.5)	67.9(1.4)	55.7(3.2)	50.8(3.5)
	1986	62.8(1.7)	64.9(2.1)	60.7(2.1)	63.1(2.0)	60.9(3.9)	62.0(2.6)
	1982	70.4(1.1)	72.7(1.3)	68.3(1.7)	71.2(1.2)	67.2(2.3)	66.5(5.6)
	1977	73.7(1.0)	72.7(1.7)	74.5(1.4)	75.2(1.1)	65.0(2.8)	69.2(3.0)
Museum: Habitats	1992	87.9(1.0)	85.4(1.5)	90.7(1.2)	90.4(0.9)	78.7(2.6)	84.9(3.6)
	1990	85.4(1.0)	83.1(1.6)	87.7(1.0)	86.2(1.2)	85.3(2.4)	80.3(3.2)
	1986	82.2(0.9)	81.8(1.3)	82.6(1.5)	83.7(1.1)	76.9(2.1)	73.7(5.0)
	1977	80.8(1.2)	77.0(1.5)	84.6(1.5)	84.0(0.9)	67.4(3.3)	62.2(5.8)
Museum: Similar animals	1992	62.4(1.5)	60.4(2.2)	64.4(1.6)	64.7(1.7)	46.5(3.4)	74.0(3.2)
	1990	64.3(1.5)	62.3(1.9)	66.3(1.8)	67.4(1.6)	54.7(3.1)	53.7(4.1)
	1986	59.1(1.7)	60.2(2.3)	58.1(2.7)	62.4(2.1)	45.6(2.6)	52.0(3.1)
	1977	58.8(1.9)	57.7(2.3)	59.8(2.1)	61.6(1.9)	45.0(2.6)	46.5(7.1)
See atom w/unaided eye?	1992	92.4(0.7)	93.1(0.9)	91.7(0.8)	94.9(0.6)	82.8(2.3)	89.1(3.3)
	1990	91.9(0.7)	92.8(0.9)	91.0(1.0)	94.9(0.8)	82.9(2.1)	81.9(3.6)
	1986	91.4(1.1)	93.1(1.3)	69.7(1.4)	94.3(1.0)	81.6(2.5)	79.6(4.3)
	1977	91.4(0.9)	92.5(1.0)	90.3(1.2)	93.3(1.0)	81.9(2.6)	90.7(2.9)
See atom w/magnifying glass?	1992	74.2(1.2)	77.7(1.6)	70.5(1.5)	81.2(1.4)	47.0(4.3)	58.7(4.1)
	1990	71.4(1.5)	76.8(1.6)	66.3(2.1)	79.6(1.3)	40.9(4.8)	56.0(5.6)
	1986	72.8(1.7)	77.7(1.4)	68.0(3.2)	79.6(1.7)	46.7(3.8)	47.8(3.8)
	1977	75.6(1.4)	78.5(1.5)	72.6(1.9)	80.9(1.4)	47.6(4.2)	60.3(5.4)
See atom w/microscope?	1992	54.0(1.4)	57.7(2.2)	50.0(1.7)	59.3(1.7)	34.7(3.0)	40.4(4.8)
	1990	53.9(1.3)	58.4(1.7)	49.5(1.8)	59.4(1.3)	33.8(3.8)	42.4(3.1)
	1986	56.8(1.7)	60.8(1.8)	52.8(2.1)	61.1(1.8)	39.8(2.7)	43.5(6.0)
	1977	63.5(1.5)	67.1(2.0)	59.8(1.6)	66.4(1.8)	50.5(3.9)	53.8(7.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Heating 2 pans: Heats fastest	1992	73.2(1.3)	75.3(1.9)	71.0(1.7)	78.7(1.4)	51.8(3.7)	64.3(4.4)
	1990	72.1(1.1)	78.4(1.5)	66.1(1.9)	77.5(1.2)	55.5(2.7)	53.0(3.8)
	1986	72.5(1.8)	75.9(1.7)	69.0(2.4)	77.1(1.8)	54.5(3.3)	54.8(5.0)
	1982	75.3(1.5)	79.1(1.6)	71.9(2.2)	79.6(1.4)	54.8(3.7)	65.9(5.2)
	1977	76.1(1.5)	79.7(1.8)	72.7(2.1)	81.8(1.4)	49.5(3.9)	53.8(4.6)
Heating 2 pans: Heats most	1992	39.5(1.3)	40.7(1.8)	38.2(1.8)	39.3(1.5)	42.0(2.6)	31.4(3.5)
	1990	37.3(1.0)	35.7(1.5)	38.9(1.5)	36.9(1.2)	38.7(3.4)	40.0(3.8)
	1986	38.9(0.9)	38.8(1.8)	38.9(1.6)	37.6(1.1)	44.9(3.1)	40.9(4.6)
	1982	40.7(1.4)	37.9(2.3)	43.3(1.5)	41.5(1.5)	40.4(3.9)	33.5(2.5)
	1977	36.9(0.9)	37.1(1.4)	36.8(1.6)	37.3(1.1)	38.2(2.0)	27.5(4.8)
Heating 2 pans: Cools fastest	1992	65.0(1.1)	62.6(1.6)	67.7(1.5)	66.7(1.3)	61.8(3.2)	54.0(5.5)
	1990	62.7(1.2)	57.4(2.0)	67.7(1.4)	64.1(1.3)	55.0(2.8)	62.6(2.8)
	1986	65.8(1.6)	63.5(2.3)	68.2(1.8)	66.7(2.2)	61.8(2.4)	63.4(3.0)
	1982	69.1(1.2)	64.4(1.7)	73.5(1.3)	71.4(1.4)	59.0(3.5)	62.0(3.7)
	1977	69.4(1.0)	66.7(1.6)	72.0(1.2)	70.8(1.0)	65.0(3.3)	58.5(2.6)
Tissues and cells	1992	55.3(1.6)	56.8(2.0)	53.7(2.0)	58.2(1.7)	45.2(3.2)	48.5(4.4)
	1990	56.8(1.5)	57.1(1.7)	56.5(2.0)	58.5(1.9)	50.3(2.6)	52.3(5.5)
	1986	56.6(1.8)	57.2(2.2)	56.1(2.2)	58.1(2.1)	51.2(2.7)	50.9(4.1)
	1982	51.1(1.8)	52.9(2.0)	49.4(2.1)	52.9(2.1)	42.5(4.4)	43.2(6.9)
	1977	52.5(1.5)	51.1(2.3)	54.0(1.6)	53.9(1.5)	42.9(3.7)	56.0(6.1)
Melting crushed ice	1992	42.3(1.2)	46.0(1.7)	38.4(1.7)	47.9(1.4)	18.7(2.3)	35.9(3.2)
	1990	44.0(1.1)	47.5(1.7)	40.6(1.5)	47.5(1.4)	30.1(2.5)	38.0(4.2)
	1986	39.6(1.6)	45.0(1.7)	34.2(2.6)	43.8(1.9)	21.0(3.3)	25.2(5.5)
	1982	44.6(1.7)	51.4(2.3)	38.3(1.8)	47.5(2.0)	28.8(3.1)	37.7(4.1)
	1977	52.2(1.9)	56.8(2.1)	47.9(2.5)	56.5(1.8)	28.7(2.5)	43.7(3.3)
Function of red blood cells	1992	55.7(1.3)	59.2(1.6)	52.0(2.3)	57.5(1.5)	45.6(4.4)	57.6(4.7)
	1990	58.5(1.2)	63.1(1.2)	54.2(1.8)	60.2(1.5)	57.9(3.2)	47.0(4.7)
	1986	58.0(2.0)	60.8(2.7)	55.2(1.9)	58.5(2.2)	59.8(3.2)	50.4(4.2)
	1982	57.7(1.3)	59.4(1.9)	56.1(2.2)	58.8(1.7)	54.8(2.9)	46.1(3.5)
	1977	54.2(1.6)	55.5(2.0)	52.8(1.8)	55.3(1.7)	51.6(2.6)	39.1(4.7)
How to recover salt from water	1992	40.3(1.7)	41.5(2.2)	39.0(2.2)	42.4(1.9)	30.9(2.5)	34.7(5.2)
	1990	38.1(1.2)	41.4(1.7)	34.9(1.7)	39.6(1.3)	36.7(2.3)	29.8(4.1)
	1986	37.6(1.5)	43.1(2.3)	32.0(1.8)	40.3(1.6)	29.1(3.0)	23.2(3.0)
	1977	42.1(1.6)	48.5(1.9)	36.0(2.0)	44.2(1.9)	30.5(1.9)	36.8(4.9)
Water temperature for swimming	1992	35.7(1.6)	40.8(1.9)	30.4(2.2)	39.0(1.8)	26.1(2.4)	20.4(4.4)
	1990	36.8(1.4)	41.8(1.7)	32.1(1.8)	40.4(1.7)	26.2(2.8)	25.4(4.5)
	1986	33.2(1.7)	37.3(2.7)	29.2(2.0)	34.8(2.0)	27.9(2.6)	25.1(4.0)
	1982	33.8(1.8)	38.0(2.4)	30.0(2.1)	35.7(2.2)	23.6(3.8)	31.4(4.9)
	1977	27.4(2.2)	32.2(2.2)	22.6(2.7)	29.9(2.4)	19.3(3.5)	9.6(2.6)
Sulfur dioxide and acid rain	1992	59.2(1.6)	62.0(2.2)	56.1(2.0)	64.0(1.8)	39.6(3.5)	49.4(3.5)
	1990	53.7(1.5)	61.7(1.8)	46.0(1.8)	59.4(1.6)	34.6(3.1)	40.7(3.6)
	1986	56.1(1.7)	61.6(2.5)	50.6(3.4)	59.3(1.7)	42.7(4.0)	45.4(7.0)
	1982	35.2(1.7)	39.4(2.2)	31.4(1.5)	37.7(1.9)	21.6(3.5)	32.0(6.6)
	1977	19.9(1.3)	23.6(2.2)	16.4(1.5)	20.6(1.6)	17.6(1.7)	15.3(3.4)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Water is part of all cells	1992	43.2(1.3)	43.6(1.8)	42.8(2.0)	44.5(1.5)	41.6(2.4)	30.1(4.7)
	1990	49.8(1.3)	50.6(1.6)	49.0(2.0)	50.1(1.5)	52.1(4.4)	46.8(4.3)
	1986	47.2(2.7)	47.4(3.3)	46.9(2.8)	48.0(3.4)	48.0(2.6)	36.4(3.4)
	1977	34.1(1.5)	35.6(1.5)	32.6(2.2)	33.3(1.8)	37.3(2.6)	37.5(3.7)
Wolves and caribou	1992	47.6(1.6)	51.5(2.0)	43.5(2.3)	53.2(2.0)	27.8(2.6)	32.7(3.5)
	1990	43.9(1.3)	48.5(1.6)	39.5(1.8)	49.6(1.7)	24.8(2.2)	30.4(4.1)
	1986	41.2(2.2)	46.6(1.6)	35.7(4.5)	45.0(2.5)	28.7(2.9)	25.3(4.3)
	1977	34.6(1.6)	39.4(1.7)	30.0(2.3)	38.4(1.7)	18.1(2.7)	22.0(3.2)
Cells, tissues, organs	1992	36.0(1.5)	34.8(1.5)	37.3(2.3)	38.4(1.7)	26.3(3.5)	30.7(4.7)
	1990	36.3(1.3)	36.7(1.8)	35.9(1.6)	39.0(1.4)	27.5(2.7)	22.4(3.5)
	1986	33.5(1.6)	32.8(1.9)	34.2(2.0)	35.0(1.9)	27.4(3.0)	29.1(3.7)
	1977	25.2(1.3)	25.1(1.9)	25.2(1.6)	26.6(1.4)	18.6(2.6)	19.3(5.1)
Effects of pepsin	1992	24.6(1.2)	27.8(1.3)	21.3(1.8)	26.6(1.5)	17.5(2.1)	18.1(4.3)
	1990	23.6(1.4)	26.0(1.8)	21.4(1.5)	25.5(1.8)	15.9(2.0)	18.5(1.9)
	1986	25.3(1.4)	30.2(1.8)	20.4(1.8)	26.9(1.7)	20.1(2.5)	21.2(2.2)
	1982	24.6(1.8)	29.8(2.2)	19.8(1.9)	25.2(2.1)	22.4(3.0)	14.2(4.6)
	1977	31.0(1.3)	32.7(1.6)	29.1(1.3)	32.3(1.6)	21.5(1.9)	30.6(4.1)
Seed germination	1992	15.8(1.2)	17.7(1.6)	13.7(1.1)	15.3(1.3)	19.7(2.1)	14.0(3.6)
	1990	15.7(0.9)	16.8(1.3)	14.6(1.3)	15.8(1.0)	14.1(2.6)	18.9(2.5)
	1986	17.6(1.4)	16.4(2.2)	18.8(1.5)	18.4(1.7)	13.9(1.7)	15.9(2.1)
	1982	21.0(1.3)	20.9(1.5)	21.1(1.5)	20.8(1.3)	22.9(3.1)	18.6(3.8)
	1977	21.0(1.3)	22.1(2.0)	20.0(1.2)	21.6(1.6)	21.2(3.2)	14.0(2.7)
Efficient use of grain as food	1992	18.0(0.9)	20.5(1.3)	15.3(1.4)	18.5(1.1)	16.0(1.7)	14.3(2.6)
	1990	19.7(0.9)	20.3(1.3)	19.2(1.1)	20.4(1.1)	16.6(2.3)	19.7(1.9)
	1986	22.3(1.3)	25.5(1.6)	19.1(1.9)	22.6(1.5)	21.1(2.6)	22.2(3.9)
	1982	18.4(1.2)	21.7(1.7)	15.2(1.6)	19.2(1.2)	14.5(3.6)	12.7(3.5)
	1977	21.9(0.9)	25.4(1.7)	18.5(1.2)	23.1(1.2)	18.1(2.0)	16.9(3.9)
World population growth	1992	13.3(0.9)	16.6(1.3)	9.9(1.1)	15.0(1.1)	6.0(1.3)	12.2(2.6)
	1990	14.3(0.9)	17.3(1.7)	11.5(0.8)	16.3(1.1)	8.5(2.7)	8.2(2.1)
	1986	12.6(1.1)	13.7(1.5)	11.5(1.5)	13.4(1.4)	11.4(2.7)	7.3(2.4)
	1982	12.4(1.1)	16.4(1.6)	8.6(1.0)	13.4(1.3)	7.4(1.7)	9.0(2.2)
	1977	13.8(0.8)	17.3(1.2)	10.4(1.3)	15.0(0.9)	9.3(1.4)	11.2(2.6)
Saving resources: Insulation	1992	66.6(1.1)	70.4(1.3)	62.7(1.7)	69.2(1.4)	58.0(2.5)	59.8(4.5)
	1990	66.8(1.2)	71.3(1.2)	62.6(1.9)	69.6(1.4)	63.0(3.9)	56.7(4.2)
	1986	80.7(1.7)	84.7(2.4)	76.8(1.9)	81.7(2.1)	76.4(2.8)	76.8(3.2)
	1982	88.9(1.1)	89.7(1.1)	88.2(1.6)	89.2(1.3)	86.5(2.3)	90.7(1.8)
	1977	91.6(0.9)	92.9(1.1)	90.3(1.3)	93.4(1.0)	85.9(2.6)	87.3(2.4)
Saving resources: Planting	1992	73.5(1.0)	73.7(1.3)	73.3(1.4)	75.9(1.2)	62.7(4.0)	67.4(2.9)
	1990	69.6(1.2)	70.5(1.6)	68.8(1.7)	72.6(1.4)	60.6(3.8)	61.2(3.0)
	1986	62.8(1.6)	65.2(1.9)	60.4(1.7)	64.9(2.0)	51.8(2.8)	61.7(4.5)
	1982	47.5(1.9)	49.7(2.6)	45.4(2.6)	47.9(2.3)	44.7(3.8)	42.1(6.7)
	1977	69.9(1.2)	70.6(1.5)	69.3(1.6)	72.0(1.1)	63.4(2.4)	55.7(9.5)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Saving resources: Throwaways	1992	69.1(1.3)	67.9(1.8)	70.3(1.5)	73.6(1.3)	47.9(3.6)	63.1(5.0)
	1990	49.5(1.4)	50.3(1.5)	48.8(1.7)	53.2(1.4)	40.9(3.7)	35.7(5.3)
	1986	47.2(1.7)	50.3(1.8)	44.1(2.4)	49.4(2.3)	38.0(2.8)	40.0(3.7)
	1982	58.7(1.2)	60.2(1.4)	57.2(1.6)	61.0(1.3)	47.3(2.9)	52.8(5.0)
	1977	54.2(1.6)	56.9(2.0)	51.5(1.8)	56.7(1.8)	39.3(3.0)	51.1(4.8)
Saving resources: Lawns	1992	45.6(1.5)	48.2(2.0)	43.1(1.7)	48.2(2.0)	32.3(2.8)	43.4(4.5)
	1990	42.1(1.1)	45.1(1.4)	39.2(1.6)	44.7(1.1)	31.6(3.5)	34.1(4.7)
	1986	45.5(1.4)	47.3(2.3)	43.7(2.0)	48.9(1.6)	30.7(3.8)	37.7(4.0)
	1982	63.5(2.0)	66.9(1.9)	60.1(2.4)	67.6(2.1)	42.0(2.9)	57.3(5.2)
	1977	51.0(1.3)	51.9(1.9)	50.1(2.2)	53.8(1.4)	35.2(2.9)	47.3(6.2)
Plate tectonics: Mountains	1992	67.3(1.4)	68.5(1.8)	66.1(1.7)	70.2(1.6)	57.5(3.2)	55.8(3.7)
	1990	67.5(1.7)	67.8(2.7)	67.2(1.9)	71.2(1.8)	58.0(3.0)	53.4(3.2)
	1986	64.9(1.7)	67.6(2.0)	62.2(2.7)	69.1(2.0)	45.9(2.9)	54.9(5.2)
	1982	65.0(1.8)	67.6(1.9)	62.4(2.5)	67.7(1.9)	49.2(3.9)	64.7(4.6)
	1977	72.2(1.4)	71.9(1.9)	72.5(1.8)	75.5(1.4)	57.1(2.5)	59.8(7.3)
Plate tectonics: Weather	1992	59.2(1.7)	60.2(2.1)	58.2(1.9)	65.7(1.5)	29.3(3.7)	50.9(4.4)
	1990	58.6(1.6)	60.5(1.9)	56.8(2.1)	65.5(1.5)	38.2(4.3)	37.2(4.1)
	1986	53.1(1.3)	56.3(1.7)	49.9(2.1)	58.1(1.4)	31.6(2.7)	36.6(7.1)
	1982	69.0(1.7)	70.4(2.4)	67.6(2.0)	73.8(1.6)	50.3(3.7)	45.1(4.4)
	1977	55.9(1.8)	56.0(1.7)	55.8(2.2)	61.3(1.9)	34.6(2.9)	32.4(4.4)
Plate tectonics: Earthquakes	1992	87.0(1.1)	87.4(1.4)	86.7(1.4)	89.9(0.8)	77.2(2.8)	79.8(5.3)
	1990	87.7(1.0)	88.0(1.2)	87.4(1.2)	89.4(1.0)	82.8(2.7)	81.2(2.8)
	1986	78.9(1.3)	81.1(1.9)	76.7(1.4)	81.4(1.5)	69.2(2.5)	69.6(4.8)
	1982	82.9(0.9)	82.9(1.3)	82.8(1.4)	84.9(1.2)	72.4(3.1)	78.4(2.8)
	1977	84.1(1.1)	84.2(1.3)	84.0(1.5)	87.6(1.1)	70.3(2.9)	63.5(9.2)
Plate tectonics: Continents	1992	72.9(1.5)	73.1(2.0)	72.8(1.7)	78.6(1.2)	49.4(4.1)	61.8(3.3)
	1990	73.5(1.5)	73.0(1.9)	74.0(1.7)	78.0(1.4)	58.6(4.4)	59.6(3.6)
	1986	65.8(1.2)	67.1(1.5)	64.5(1.9)	70.5(1.4)	46.1(2.8)	52.1(5.6)
	1982	64.8(1.7)	64.1(2.3)	65.6(2.1)	69.2(1.9)	42.5(3.8)	52.3(3.1)
	1977	62.5(1.8)	63.2(1.9)	61.9(2.4)	68.3(1.8)	38.2(3.6)	41.7(5.4)
Plate tectonics: Moonr	1992	69.0(1.6)	68.3(1.7)	69.6(1.9)	74.2(1.5)	45.9(4.9)	59.9(5.3)
	1990	68.9(1.5)	67.8(1.7)	70.0(2.0)	73.6(1.4)	53.1(4.2)	55.8(3.0)
	1986	60.0(1.6)	59.6(1.9)	60.4(2.1)	64.4(2.0)	41.4(2.5)	42.8(4.2)
	1982	78.2(1.6)	77.8(2.0)	78.5(2.0)	82.6(1.3)	58.7(2.9)	59.9(3.9)
	1977	64.6(1.8)	61.5(1.6)	67.5(2.6)	69.3(1.7)	46.7(3.0)	36.3(5.9)
Present energy source in U.S.	1992	46.6(1.8)	48.5(2.5)	44.7(1.8)	50.3(2.3)	35.0(3.2)	33.1(3.5)
	1990	42.3(1.6)	46.0(2.1)	38.8(1.7)	46.7(1.5)	32.5(4.6)	21.8(3.8)
	1986	41.3(1.6)	45.5(1.9)	37.3(2.4)	44.4(1.9)	32.2(3.1)	23.2(3.3)
	1982	65.9(1.8)	67.2(2.4)	64.8(1.8)	70.5(1.5)	47.4(2.7)	50.2(6.7)
	1977	56.4(1.7)	61.6(2.1)	51.4(2.1)	61.3(2.0)	37.0(2.2)	36.8(5.1)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Components of solar system	1992	71.6(1.5)	72.6(1.6)	70.7(2.0)	74.4(1.6)	60.0(3.7)	62.8(3.1)
	1990	72.6(1.1)	71.5(1.4)	73.6(1.5)	75.8(1.2)	61.9(3.5)	66.8(5.3)
	1986	65.5(1.6)	67.7(2.3)	63.3(2.1)	67.7(2.0)	56.5(2.7)	59.4(5.9)
	1982	70.9(1.5)	72.1(2.1)	69.8(1.8)	73.6(1.4)	59.7(4.9)	62.5(3.9)
	1977	70.3(1.5)	71.1(2.0)	69.6(1.7)	73.9(1.6)	56.0(3.6)	55.1(4.8)
Acceleration of ball on ramp	1992	61.0(1.4)	64.8(1.9)	57.2(1.7)	67.5(1.4)	35.3(3.6)	49.8(4.9)
	1990	60.3(1.3)	66.3(1.6)	54.6(1.7)	64.8(1.3)	45.4(4.0)	48.1(4.1)
	1986	59.8(1.8)	65.8(1.9)	53.7(2.4)	63.8(2.2)	46.0(3.1)	44.8(4.2)
	1982	63.3(1.7)	66.7(1.9)	60.1(2.1)	67.7(1.6)	44.1(5.0)	51.9(3.3)
	1977	64.0(1.3)	69.6(1.9)	58.5(1.4)	68.8(1.2)	41.8(2.8)	46.8(4.8)
Weather: Wind Speed	1992	90.4(1.0)	90.7(1.3)	90.1(1.1)	92.6(1.1)	80.0(3.1)	89.5(3.0)
	1990	88.8(0.9)	88.0(1.3)	89.7(1.0)	92.2(0.7)	79.1(4.3)	78.5(5.0)
	1986	87.0(1.0)	87.9(1.6)	86.1(1.4)	89.7(1.1)	75.8(2.1)	79.6(4.5)
	1982	77.5(1.3)	77.4(1.6)	77.5(1.8)	80.1(1.1)	66.1(4.6)	67.0(5.0)
	1977	87.7(1.1)	86.5(1.7)	88.8(0.9)	91.4(0.7)	70.3(3.1)	80.1(4.5)
Weather: Sunrise	1992	63.3(1.4)	59.8(1.7)	66.7(1.8)	65.0(1.7)	55.8(2.9)	56.7(6.4)
	1990	63.2(1.3)	58.8(1.5)	67.4(1.9)	65.9(1.4)	51.6(3.7)	58.8(3.6)
	1986	64.0(1.2)	61.6(1.5)	66.5(1.5)	65.1(1.3)	57.4(2.4)	66.2(4.5)
	1982	54.2(1.3)	53.5(1.8)	54.8(1.7)	54.7(1.5)	50.8(3.3)	55.2(6.2)
	1977	51.1(1.6)	49.8(2.0)	52.5(1.8)	52.7(1.9)	45.0(2.9)	39.5(6.0)
Weather: Rainfall	1992	77.0(1.4)	78.0(1.8)	76.0(1.6)	81.2(1.6)	63.4(4.1)	59.4(5.4)
	1990	75.8(1.2)	75.1(1.5)	76.4(1.5)	79.2(1.2)	64.7(3.5)	64.8(3.4)
	1986	76.4(1.2)	77.1(1.8)	75.8(1.3)	81.3(1.3)	59.6(3.5)	59.7(5.3)
	1982	69.0(1.5)	69.3(1.9)	68.7(1.8)	72.9(1.4)	52.2(3.4)	50.8(5.3)
	1977	79.8(1.3)	79.8(1.7)	79.9(1.6)	84.1(1.1)	59.7(2.3)	70.0(5.3)
Weather: Humidity	1992	83.0(1.0)	81.1(1.4)	84.9(1.2)	87.0(1.0)	66.1(3.2)	74.3(3.5)
	1990	83.2(1.2)	81.7(1.6)	84.6(1.2)	87.0(0.9)	70.9(4.4)	71.9(4.8)
	1986	80.0(1.1)	79.7(1.4)	80.3(2.2)	83.8(1.4)	65.2(2.8)	68.7(4.7)
	1982	68.9(1.5)	70.6(1.7)	67.3(2.1)	72.0(1.6)	56.8(3.8)	49.9(3.8)
	1977	80.6(1.0)	79.9(1.4)	81.4(1.0)	83.5(1.0)	67.9(2.2)	72.5(3.8)
Weather: First day of spring	1992	61.0(1.6)	62.8(2.0)	59.2(1.8)	63.8(1.7)	53.1(3.2)	48.0(6.5)
	1990	60.6(1.2)	62.3(1.6)	59.0(1.3)	63.0(1.3)	52.7(2.9)	57.5(3.2)
	1986	64.2(1.0)	64.8(1.6)	63.6(2.5)	66.6(1.2)	55.5(2.4)	56.9(3.2)
	1982	65.1(1.2)	66.3(1.6)	64.0(1.9)	66.3(1.4)	59.2(2.3)	60.8(4.8)
	1977	62.0(1.4)	64.8(1.6)	59.2(1.8)	63.4(1.4)	61.2(2.8)	41.0(7.9)
Weather: Average temperature	1992	63.7(1.3)	64.9(2.1)	62.5(1.4)	65.8(1.3)	54.7(2.5)	60.6(6.2)
	1990	60.2(1.6)	60.7(1.9)	59.7(2.0)	63.7(1.6)	50.9(3.4)	43.5(5.9)
	1986	61.0(1.6)	62.2(1.8)	59.7(2.3)	62.8(1.9)	54.8(2.8)	53.0(5.6)
	1982	54.2(1.3)	55.5(1.5)	53.0(1.7)	56.1(1.4)	48.3(3.2)	41.5(4.5)
	1977	62.2(1.3)	61.2(1.7)	63.2(1.5)	64.9(1.3)	49.9(3.3)	56.5(5.6)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Communicating on the moon	1992	62.3(1.4)	68.5(1.5)	56.1(2.0)	64.7(1.6)	47.4(3.7)	63.0(3.1)
	1990	61.5(1.3)	69.9(1.8)	53.4(1.7)	63.6(1.4)	49.4(3.1)	63.9(5.2)
	1986	60.5(1.2)	67.0(2.1)	54.1(2.4)	61.8(1.5)	53.4(3.1)	55.9(6.2)
	1982	55.5(1.5)	66.4(1.3)	45.2(2.0)	57.7(1.7)	42.2(2.6)	51.2(3.0)
	1977	59.3(1.7)	66.1(2.3)	52.4(2.1)	62.8(1.7)	45.8(2.8)	37.3(4.8)
Half-life	1992	50.0(1.6)	50.5(2.0)	49.6(1.9)	49.9(1.8)	45.2(4.1)	54.0(5.0)
	1990	50.0(1.4)	50.4(1.7)	49.7(1.7)	50.1(1.5)	49.9(3.2)	49.4(6.9)
	1986	55.1(1.4)	59.7(1.7)	50.5(2.3)	56.1(1.7)	51.0(2.9)	48.6(3.2)
	1982	50.6(2.1)	54.0(2.4)	47.5(2.5)	49.7(2.5)	54.7(2.5)	53.5(4.2)
	1977	49.6(1.5)	50.3(1.8)	48.8(2.0)	51.4(1.8)	44.4(3.6)	35.9(5.4)
Speed of light and sound	1992	20.2(1.2)	22.0(1.5)	18.5(1.4)	22.6(1.4)	10.7(2.6)	12.2(3.6)
	1990	18.5(1.1)	21.4(1.5)	15.8(1.4)	20.4(1.2)	11.5(2.0)	13.1(2.9)
	1986	14.9(1.3)	17.6(1.4)	12.4(1.8)	15.8(1.5)	10.5(1.3)	11.2(3.9)
	1977	16.7(1.3)	17.9(1.7)	15.4(1.5)	17.9(1.4)	13.0(1.8)	10.8(3.9)
Angle of reflection	1992	55.7(1.5)	62.2(1.9)	49.3(2.1)	58.2(1.7)	45.1(3.8)	50.4(2.9)
	1990	56.1(1.4)	64.2(1.6)	48.4(2.0)	59.8(1.4)	40.6(3.2)	51.9(4.4)
	1986	50.8(2.3)	59.9(3.6)	41.8(2.1)	51.9(2.9)	43.9(2.8)	48.9(3.6)
	1982	46.9(1.9)	55.8(2.8)	38.6(1.6)	50.5(1.9)	29.6(3.7)	38.7(5.0)
	1977	47.8(1.1)	56.0(1.8)	39.6(1.6)	51.0(1.3)	31.9(2.3)	35.8(5.4)
Earth's crust: Oldest layers	1992	50.8(1.3)	51.3(1.8)	50.3(1.8)	54.4(1.5)	35.8(2.4)	46.0(3.9)
	1990	50.7(1.5)	50.1(1.8)	51.3(2.1)	55.2(1.5)	36.5(3.9)	36.4(5.4)
	1986	46.1(1.9)	44.5(1.9)	47.7(3.5)	50.0(2.2)	31.0(2.3)	32.1(3.8)
	1977	42.6(1.5)	42.5(1.9)	42.6(1.9)	46.6(1.6)	22.9(2.3)	30.8(5.2)
Earth's crust: Curved layers	1992	44.2(1.3)	46.2(1.8)	42.1(1.5)	45.0(1.5)	41.2(3.5)	39.7(4.8)
	1990	44.3(1.5)	44.9(1.8)	43.8(1.8)	46.0(1.6)	38.1(3.0)	39.7(4.3)
	1986	41.6(1.6)	44.2(1.7)	39.0(2.4)	42.7(1.9)	34.9(2.8)	40.2(4.0)
	1977	47.2(1.6)	50.6(1.9)	44.2(1.9)	48.9(1.7)	41.5(3.6)	35.5(3.4)
Measuring current in a circuit	1992	44.6(1.5)	40.0(2.1)	49.1(1.6)	45.3(1.6)	44.1(3.2)	37.3(4.6)
	1990	43.1(1.1)	40.6(1.3)	45.5(1.6)	43.0(1.3)	45.2(2.4)	39.2(3.6)
	1986	46.0(1.6)	43.9(2.5)	48.1(1.7)	46.0(1.9)	44.4(2.3)	42.3(3.6)
	1982	40.1(1.2)	40.4(1.9)	39.8(1.6)	41.3(1.3)	34.7(3.2)	43.7(5.9)
	1977	39.1(1.2)	37.0(2.2)	41.2(1.8)	39.1(1.2)	36.5(3.3)	49.2(4.2)
Movement of heated water	1992	36.0(1.3)	38.2(2.0)	33.7(1.6)	38.0(1.5)	27.4(2.3)	28.5(3.8)
	1990	37.5(1.3)	40.4(1.4)	34.8(1.8)	41.0(1.4)	27.4(3.0)	26.8(3.4)
	1986	37.8(1.2)	44.3(1.4)	31.3(2.2)	41.3(1.6)	20.3(2.2)	34.2(3.3)
	1977	34.4(1.9)	40.9(2.7)	27.9(1.6)	38.6(2.0)	15.5(2.1)	17.0(3.9)
Effect of clearing forests	1992	34.6(1.5)	35.3(2.0)	33.9(1.7)	37.7(1.6)	24.5(3.5)	23.9(4.4)
	1990	36.1(1.3)	40.3(1.5)	32.2(1.7)	39.9(1.3)	27.1(2.9)	21.1(3.0)
	1986	36.2(1.4)	41.0(1.9)	31.5(1.8)	40.6(1.6)	21.4(1.9)	19.9(3.9)
	1982	38.6(1.4)	42.5(2.0)	34.8(1.4)	42.2(1.5)	24.0(3.0)	24.8(5.4)
	1977	44.7(1.7)	52.1(2.0)	37.3(2.3)	49.0(1.7)	26.1(3.1)	23.4(4.0)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Describing the rock cycle	1992	30.9(1.1)	28.3(1.4)	33.5(1.5)	32.3(1.3)	26.0(3.0)	28.5(4.1)
	1990	29.6(1.2)	29.7(1.5)	29.5(1.8)	29.8(1.4)	29.8(3.0)	26.2(4.3)
	1986	29.8(1.2)	30.3(3.5)	29.4(3.1)	31.0(1.6)	24.8(2.2)	26.1(3.2)
	1982	30.0(1.7)	30.7(2.4)	29.4(2.1)	32.1(2.0)	18.6(2.1)	26.2(3.9)
	1977	31.0(1.6)	28.4(2.1)	33.7(1.5)	32.2(2.0)	26.6(2.8)	19.4(6.1)
Induction of electric current	1992	45.9(1.5)	49.0(1.7)	42.7(2.2)	48.9(1.8)	32.2(3.6)	38.7(5.6)
	1990	44.9(1.5)	52.1(2.1)	38.0(2.0)	47.4(1.7)	38.1(3.9)	33.6(4.1)
	1986	46.2(1.8)	54.0(2.8)	38.6(1.9)	49.5(2.2)	32.0(2.6)	36.5(4.5)
	1982	34.9(1.5)	44.2(1.8)	26.3(2.0)	36.5(1.6)	28.0(2.7)	28.5(4.6)
	1977	45.0(1.7)	51.1(2.2)	39.3(1.8)	47.0(1.9)	35.7(3.0)	31.7(5.7)
Balancing blocks on seesaw	1992	38.5(1.4)	47.1(2.0)	29.8(1.7)	43.7(1.7)	17.4(2.1)	27.2(3.5)
	1990	38.6(1.3)	50.6(1.8)	27.1(1.4)	43.9(1.2)	20.5(2.9)	25.3(3.5)
	1986	38.9(1.3)	45.5(1.7)	32.4(2.1)	43.8(1.6)	18.7(2.8)	28.4(3.4)
	1982	42.3(1.6)	54.0(2.1)	31.2(2.0)	46.1(1.8)	23.4(2.1)	29.1(3.3)
	1977	42.8(2.0)	52.9(2.5)	31.5(2.3)	48.2(2.1)	18.9(2.5)	21.6(2.8)
Air masses over oceans	1992	20.0(1.1)	22.2(1.5)	17.9(1.4)	22.1(1.4)	13.0(2.1)	10.4(2.9)
	1990	19.1(1.3)	20.6(1.4)	17.6(1.6)	20.8(1.4)	13.2(2.0)	16.0(2.9)
	1986	18.5(1.4)	21.1(2.0)	15.9(1.9)	19.1(1.7)	15.8(2.3)	17.0(2.8)
	1977	19.0(1.0)	21.2(1.6)	17.0(1.3)	20.4(1.3)	13.8(1.2)	10.9(2.4)
Product Z: Arthritis	1992	47.4(1.4)	44.7(2.1)	49.9(1.9)	53.3(1.7)	31.2(2.1)	31.4(3.1)
	1990	47.9(2.0)	44.9(2.2)	51.1(2.1)	54.6(1.8)	28.6(5.5)	30.6(3.5)
	1986	42.5(2.3)	39.9(2.8)	45.1(2.5)	47.6(2.4)	25.6(3.8)	27.9(4.0)
	1982	38.1(1.9)	38.9(2.5)	37.4(1.9)	40.6(2.0)	25.8(3.5)	29.3(5.1)
	1977	41.2(1.3)	36.2(2.0)	45.7(1.7)	44.7(1.4)	24.0(2.9)	29.6(4.3)
Product Z: Harm	1992	85.1(0.9)	85.1(1.2)	85.1(1.2)	88.2(1.0)	76.5(2.6)	77.4(3.4)
	1990	80.7(1.4)	78.4(1.9)	83.1(1.4)	86.3(1.1)	59.7(4.8)	73.7(3.0)
	1986	81.5(1.4)	79.1(2.0)	83.7(1.4)	84.6(1.6)	67.0(3.3)	77.2(4.1)
	1982	85.1(1.3)	81.5(2.1)	88.6(1.2)	87.5(1.6)	73.4(3.1)	77.3(5.8)
	1977	77.5(1.4)	75.5(1.8)	79.4(1.5)	81.4(1.5)	58.3(2.5)	65.8(4.5)
Product Z: Pain relief	1992	87.3(0.7)	84.5(1.0)	89.9(1.0)	90.7(0.7)	79.0(2.3)	74.9(2.9)
	1990	83.9(1.2)	82.5(1.5)	85.4(1.5)	87.4(0.9)	75.6(5.4)	72.3(4.2)
	1986	85.3(1.0)	82.4(1.7)	88.3(1.2)	87.4(1.1)	76.4(2.5)	81.8(2.8)
	1982	82.7(1.2)	80.9(1.6)	84.4(1.4)	84.8(1.5)	72.7(2.5)	76.4(3.4)
	1977	80.9(1.1)	78.3(2.0)	83.3(1.1)	84.7(1.0)	63.6(2.4)	67.8(4.6)
Product Z: Feel better	1992	86.1(0.9)	83.6(1.3)	88.5(1.0)	90.1(0.9)	75.5(3.2)	75.1(3.0)
	1990	81.7(1.4)	79.8(1.9)	83.6(1.5)	86.9(1.2)	63.7(4.2)	70.6(3.1)
	1986	83.5(1.2)	80.9(1.7)	86.0(1.3)	87.5(1.0)	65.5(4.0)	76.3(2.4)
	1982	83.1(1.4)	81.0(1.8)	85.2(1.3)	86.6(1.3)	68.6(4.1)	69.6(4.8)
	1977	76.4(1.6)	73.7(2.3)	78.8(1.5)	81.0(1.5)	56.5(3.1)	56.7(5.3)
Use of controls in experiments	1992	70.3(0.9)	66.4(1.4)	73.9(1.5)	72.4(1.1)	65.1(2.7)	64.2(3.6)
	1990	70.1(1.5)	67.6(1.7)	72.8(1.6)	73.0(1.6)	62.3(4.2)	62.9(3.4)
	1986	71.2(1.4)	69.4(1.9)	73.1(1.7)	73.3(1.7)	64.6(2.4)	64.5(4.3)
	1977	71.1(1.2)	69.5(1.6)	72.8(1.6)	73.8(1.4)	58.0(2.2)	66.2(5.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Using a branching key: Shape	1992	75.6(1.0)	73.8(1.6)	77.2(1.4)	79.8(1.1)	64.7(2.8)	62.4(4.5)
	1990	70.8(1.5)	69.0(1.8)	72.7(1.8)	75.4(1.4)	54.1(4.9)	62.5(3.1)
	1986	69.5(1.3)	66.9(2.6)	72.0(1.4)	73.8(1.5)	53.6(3.0)	54.5(3.9)
	1982	70.8(1.2)	69.5(1.5)	72.0(1.6)	72.6(1.3)	62.2(2.9)	63.0(5.8)
	1977	67.0(1.6)	64.9(1.9)	69.0(1.9)	70.2(1.4)	57.9(3.7)	43.3(6.4)
Using a branching key: Color	1992	44.4(1.4)	44.2(1.6)	44.6(1.7)	45.5(1.6)	42.3(3.2)	39.7(3.0)
	1990	43.9(1.5)	44.2(2.0)	43.7(1.9)	47.7(1.5)	31.0(3.6)	37.4(3.8)
	1986	40.4(1.6)	40.3(1.8)	40.6(2.1)	42.3(2.1)	31.3(2.3)	40.2(3.4)
	1982	39.3(1.3)	38.1(1.5)	40.4(1.8)	41.8(1.3)	30.9(2.4)	28.3(5.7)
	1977	34.6(1.5)	33.6(1.9)	35.6(1.5)	37.6(1.5)	22.0(3.1)	22.2(4.3)
Reading a pressure gauge	1992	72.5(1.0)	72.9(1.6)	72.1(1.3)	75.7(1.2)	59.0(2.3)	68.6(2.6)
	1990	71.1(1.4)	74.1(1.9)	67.9(1.8)	75.2(1.4)	58.3(3.6)	60.3(3.8)
	1986	66.7(1.2)	71.6(1.7)	61.8(2.7)	69.9(1.7)	53.7(2.1)	59.8(3.8)
	1982	61.6(1.3)	65.4(2.1)	57.8(1.8)	64.6(1.6)	48.3(3.2)	47.1(3.6)
	1977	57.0(1.9)	62.4(2.0)	51.7(2.4)	59.9(1.9)	43.7(4.2)	44.7(5.3)
Estimating length of a line	1992	62.8(1.2)	66.0(1.7)	59.8(1.3)	64.0(1.4)	62.1(3.1)	55.3(3.5)
	1990	58.4(1.3)	60.5(1.9)	56.2(1.6)	60.6(1.5)	53.2(4.3)	50.9(4.8)
	1986	62.4(1.4)	65.3(2.0)	59.6(2.4)	64.6(1.7)	55.5(3.6)	53.0(3.3)
	1982	63.6(1.9)	67.3(3.0)	60.2(1.5)	65.4(2.1)	52.3(3.5)	65.2(6.3)
	1977	51.7(1.7)	54.3(1.8)	49.2(2.6)	54.4(1.8)	43.1(3.2)	39.2(5.3)
Rain and corn growth	1992	56.3(1.3)	57.8(1.9)	54.9(1.6)	58.9(1.6)	49.8(3.3)	47.9(3.1)
	1990	57.3(1.6)	59.6(2.0)	54.9(1.9)	58.0(2.0)	57.0(3.5)	51.3(3.2)
	1986	57.7(1.1)	59.0(2.0)	56.5(1.6)	58.4(1.5)	52.6(2.6)	56.5(5.2)
	1982	60.7(2.2)	62.3(2.4)	59.2(2.6)	63.3(2.5)	47.1(2.9)	53.4(5.2)
	1977	55.5(1.1)	55.2(1.7)	55.8(1.6)	57.6(1.1)	47.9(2.6)	44.2(5.3)
Food shortage: Birth rate	1992	67.0(1.1)	65.5(1.4)	68.4(1.4)	68.7(1.2)	62.2(2.9)	59.8(3.7)
	1990	64.3(1.4)	62.9(2.0)	65.8(1.5)	67.0(1.6)	58.3(4.4)	56.9(2.9)
	1986	66.4(2.4)	66.1(3.5)	66.7(2.0)	69.5(2.9)	54.5(1.9)	56.6(3.5)
	1982	68.8(1.4)	66.1(2.0)	71.4(1.8)	72.0(1.6)	53.5(3.3)	57.0(4.5)
	1977	70.8(1.1)	69.2(1.5)	72.4(1.5)	74.7(1.0)	54.7(2.7)	49.5(6.3)
Food shortage: Amount of food	1992	92.6(0.6)	92.2(1.0)	93.0(0.9)	94.8(0.7)	87.0(1.9)	88.3(2.7)
	1990	90.7(1.0)	89.1(1.4)	92.3(1.0)	93.9(0.8)	83.2(3.1)	78.5(4.4)
	1986	89.0(0.7)	89.3(1.1)	88.6(1.1)	91.5(0.8)	78.9(2.8)	82.4(3.4)
	1982	87.0(1.0)	86.8(1.1)	87.1(1.3)	90.0(1.2)	72.5(3.4)	77.6(2.5)
	1977	89.7(0.9)	89.5(1.1)	89.8(1.1)	93.0(0.8)	71.4(3.1)	88.6(3.0)
Food shortage: Markets	1992	57.7(1.5)	58.5(1.7)	57.0(2.2)	62.8(1.6)	39.2(3.3)	48.6(2.7)
	1990	56.3(1.4)	55.1(2.0)	57.7(1.9)	61.9(1.2)	40.2(5.2)	39.1(2.9)
	1986	59.9(1.6)	62.3(2.1)	57.5(2.0)	64.3(1.8)	40.2(3.1)	52.9(4.4)
	1982	61.5(1.9)	65.4(2.7)	57.8(2.0)	66.5(2.0)	37.7(2.4)	47.7(3.2)
	1977	57.7(1.7)	58.6(2.2)	56.9(2.1)	62.9(1.6)	36.5(3.3)	33.1(6.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Food shortage: Weather	1992	57.5(1.1)	56.7(1.6)	58.3(1.2)	60.6(1.3)	49.2(2.9)	48.5(3.5)
	1990	57.3(1.6)	55.3(1.9)	59.4(1.9)	60.3(1.9)	48.0(2.3)	49.3(5.0)
	1986	56.1(2.3)	57.5(2.6)	54.6(2.7)	58.0(2.7)	48.7(3.9)	49.9(4.5)
	1982	52.1(1.4)	52.3(2.3)	51.8(1.9)	53.9(1.5)	43.2(3.3)	44.3(2.6)
	1977	59.2(1.3)	62.0(1.5)	56.4(1.6)	61.5(1.2)	44.7(2.8)	57.1(5.1)
Predicting snowfall	1992	64.5(1.3)	65.9(1.6)	63.2(2.0)	68.6(1.4)	52.7(2.8)	53.7(2.7)
	1990	61.8(1.5)	62.5(1.7)	61.1(2.1)	65.7(1.5)	44.7(3.7)	59.0(4.2)
	1986	61.9(2.3)	61.9(2.6)	61.8(2.5)	67.4(2.7)	40.5(3.9)	47.9(4.9)
	1977	47.6(1.6)	47.0(2.2)	48.2(1.6)	49.9(1.8)	39.3(4.7)	34.2(4.6)
Lab balance: Color of rock	1992	82.5(1.0)	80.5(1.5)	84.3(1.3)	86.5(1.0)	70.9(2.9)	71.6(4.2)
	1990	82.3(1.6)	80.0(2.0)	84.6(1.6)	85.2(1.1)	73.0(6.1)	74.0(2.7)
	1986	81.3(1.2)	78.5(1.7)	84.2(1.8)	85.0(1.4)	70.0(2.6)	66.5(4.4)
	1982	74.9(1.4)	73.9(2.3)	75.8(1.7)	78.7(1.5)	59.5(4.3)	60.0(3.6)
	1977	59.6(1.8)	57.1(1.9)	62.0(2.7)	63.2(1.9)	43.5(3.2)	41.2(5.0)
Lab balance: Accuracy	1992	61.3(1.4)	61.1(1.8)	61.5(1.9)	64.1(1.7)	55.3(3.1)	48.5(3.6)
	1990	57.4(1.5)	58.1(1.7)	56.8(2.3)	59.0(1.5)	51.5(5.8)	53.9(3.9)
	1986	56.9(2.4)	56.5(2.2)	57.3(3.2)	60.1(2.9)	45.6(2.0)	48.0(8.5)
	1982	56.3(0.8)	58.1(1.6)	54.5(1.5)	58.1(1.1)	46.4(4.1)	52.4(3.1)
	1977	54.4(1.6)	53.9(1.9)	54.9(2.1)	56.7(1.7)	47.6(3.1)	36.4(6.4)
Lab balance: Grams/ounces	1992	43.9(1.2)	43.3(1.4)	44.5(1.7)	44.8(1.4)	38.5(3.4)	42.2(3.7)
	1990	41.0(1.3)	41.3(1.6)	40.7(2.0)	41.7(1.6)	37.8(3.5)	39.1(3.3)
	1986	43.3(2.2)	41.8(2.2)	44.9(3.0)	44.4(2.8)	40.4(3.0)	37.5(4.1)
	1982	41.3(1.6)	43.6(2.1)	39.1(2.0)	42.2(1.7)	37.2(4.3)	37.5(5.4)
	1977	39.6(1.2)	39.1(1.5)	40.1(1.6)	40.4(1.2)	34.6(2.7)	35.6(5.8)
Human error in measuring time	1992	52.6(1.4)	56.3(1.9)	49.2(2.0)	55.8(1.7)	43.9(3.2)	43.4(3.3)
	1990	52.7(1.8)	57.7(2.0)	47.4(2.1)	54.0(2.0)	47.2(5.5)	48.3(2.9)
	1986	57.1(2.5)	58.9(2.1)	55.3(3.7)	60.8(3.0)	41.3(4.0)	48.9(3.9)
	1982	48.6(1.7)	54.1(2.1)	43.4(1.8)	49.5(1.7)	43.3(5.2)	42.5(4.7)
	1977	58.5(1.6)	63.2(1.9)	54.1(2.1)	61.4(1.9)	45.0(3.0)	48.0(7.5)
Volume equation	1992	58.6(1.5)	54.9(1.7)	62.1(2.0)	61.3(1.8)	52.5(2.8)	46.6(3.7)
	1990	57.1(2.2)	53.8(2.7)	60.7(2.4)	60.4(2.1)	50.5(6.8)	41.2(4.1)
	1986	55.3(1.9)	51.9(2.4)	58.7(2.2)	58.4(2.3)	42.8(4.5)	42.5(5.7)
	1982	45.3(1.8)	44.7(2.2)	45.8(1.9)	48.0(2.2)	33.0(3.1)	31.5(2.6)
	1977	33.1(1.7)	30.1(1.5)	35.8(2.7)	36.0(2.0)	19.0(2.1)	21.9(3.5)
Measurement error: Speedometer	1992	35.8(1.2)	41.2(1.7)	30.8(1.6)	34.4(1.4)	42.6(3.2)	36.7(3.1)
	1990	36.8(1.5)	40.3(2.0)	33.1(1.8)	34.3(1.3)	51.8(6.0)	28.9(4.4)
	1986	34.3(1.0)	40.9(1.8)	27.9(1.5)	31.0(1.3)	45.7(2.2)	41.0(3.1)
	1982	40.7(2.2)	45.2(2.6)	36.6(2.4)	37.5(2.2)	59.4(4.1)	38.8(6.0)
	1977	44.3(1.7)	50.4(2.3)	38.3(2.1)	41.2(2.0)	59.1(1.9)	50.8(5.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 13

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Measurement error: Tapemeasure	1992	46.2(0.9)	42.4(1.6)	49.8(1.4)	47.1(1.2)	44.9(3.5)	38.9(2.9)
	1990	46.4(1.4)	44.5(1.7)	48.4(2.1)	47.7(1.2)	42.2(6.0)	40.7(3.7)
	1986	46.3(1.6)	45.5(1.9)	47.1(2.2)	45.8(1.9)	48.7(2.8)	45.7(4.1)
	1982	43.9(1.4)	40.5(2.2)	47.1(1.8)	45.2(1.4)	36.9(2.7)	42.3(5.2)
	1977	46.0(1.2)	43.6(1.3)	48.3(2.0)	47.2(1.5)	40.6(2.7)	42.5(5.1)
Measurement error: Computer	1992	22.3(1.1)	20.1(1.4)	24.3(1.5)	20.2(1.2)	27.8(2.7)	26.8(3.8)
	1990	24.6(1.2)	24.2(1.6)	25.1(1.4)	20.3(1.2)	41.8(3.5)	27.2(3.3)
	1986	24.5(1.3)	25.6(1.9)	23.5(1.9)	21.4(1.8)	35.8(2.8)	34.9(4.2)
	1982	28.6(1.6)	33.3(2.1)	24.3(2.0)	25.6(1.5)	44.0(3.5)	30.2(5.4)
	1977	31.6(1.7)	33.0(2.3)	30.2(1.8)	28.7(1.8)	42.8(2.9)	41.5(4.9)
Meaning of 20% chance of rain	1992	23.8(1.3)	24.4(1.3)	23.1(1.9)	26.7(1.6)	15.2(2.5)	15.3(2.8)
	1990	21.5(1.1)	24.7(1.7)	18.0(1.2)	22.2(1.1)	21.5(4.7)	18.2(2.3)
	1986	19.6(0.9)	20.6(1.3)	18.7(1.5)	21.4(1.2)	15.8(3.1)	9.7(2.1)
	1982	15.7(1.3)	19.6(1.7)	12.1(1.7)	16.1(1.7)	14.0(2.5)	14.1(1.5)
	1977	14.2(0.9)	16.0(1.3)	12.5(1.3)	15.6(1.2)	9.2(1.6)	7.1(1.7)
Seasonal rainfall graph	1992	39.8(1.4)	41.1(1.6)	38.6(1.8)	42.9(1.6)	30.7(3.8)	29.5(3.3)
	1990	38.4(1.7)	42.1(2.2)	34.4(1.7)	42.6(2.0)	23.2(3.2)	32.2(3.4)
	1986	36.0(1.9)	39.5(2.9)	32.6(1.8)	38.0(2.3)	30.5(2.7)	27.0(4.5)
	1977	32.5(1.7)	35.1(2.0)	30.0(2.1)	34.2(1.8)	27.5(3.0)	20.3(4.9)
Mold growth experiment	1992	21.9(1.0)	24.6(1.5)	19.4(1.3)	25.6(1.2)	12.7(2.0)	9.7(1.8)
	1990	21.0(1.4)	23.8(1.8)	18.0(1.4)	22.8(1.7)	18.0(3.2)	10.1(2.1)
	1986	20.0(1.3)	20.9(1.6)	19.2(1.5)	21.7(1.5)	14.2(1.4)	15.2(3.4)
	1982	23.4(1.1)	23.8(1.5)	23.1(1.8)	24.7(1.3)	17.1(2.6)	18.7(3.5)
	1977	28.9(1.2)	29.4(1.8)	28.4(1.3)	31.9(1.5)	15.2(2.2)	15.7(4.2)
Invention of telephone	1992	55.0(1.6)	59.7(2.1)	50.6(2.3)	59.8(2.0)	41.5(2.5)	46.9(2.9)
	1990	52.9(1.7)	59.4(2.2)	46.0(2.0)	58.0(1.7)	36.4(5.3)	44.8(4.7)
	1986	49.6(1.5)	58.4(2.3)	40.9(1.7)	52.6(1.6)	38.6(2.9)	36.7(4.1)
	1977	49.0(1.4)	55.5(1.5)	42.7(1.8)	51.6(1.3)	37.1(4.1)	41.5(4.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Finding cause of a sore throat	1992	88.7(1.0)	85.6(1.4)	91.7(1.0)	91.5(1.0)	80.6(2.5)	86.8(2.7)
	1990	88.0(1.1)	84.7(1.3)	91.0(1.2)	92.3(0.9)	78.6(3.7)	75.0(4.9)
	1986	87.4(0.6)	83.5(1.3)	91.3(1.3)	90.0(0.6)	77.0(2.5)	82.8(2.1)
	1982	84.4(1.2)	79.6(1.6)	88.7(1.2)	86.6(1.3)	74.3(2.8)	74.7(3.8)
	1977	87.2(0.7)	83.9(1.2)	90.2(1.0)	88.4(0.8)	78.9(2.8)	68.2(2.4)
Plants bend toward light	1992	72.3(1.4)	74.9(1.7)	69.6(1.5)	77.4(1.2)	53.7(4.0)	64.0(6.3)
	1990	67.1(1.4)	71.5(1.6)	63.2(1.9)	73.5(1.1)	42.5(4.0)	55.8(4.5)
	1986	67.9(1.4)	70.3(2.1)	65.4(1.9)	73.5(1.2)	43.7(4.7)	58.2(4.6)
	1982	68.8(1.3)	71.4(2.0)	66.1(1.9)	73.6(1.2)	47.1(3.1)	47.6(3.6)
Observing a sealed aquarium	1992	75.3(1.1)	75.7(1.8)	74.9(1.5)	78.3(1.3)	65.5(3.5)	69.4(4.0)
	1990	75.3(1.3)	78.1(1.5)	72.8(1.8)	79.0(1.0)	62.8(4.3)	68.3(4.7)
	1986	77.6(1.3)	79.2(1.8)	76.1(1.8)	79.2(1.5)	74.8(4.0)	69.3(5.2)
	1982	79.4(1.4)	80.0(1.6)	78.9(1.7)	81.2(1.7)	71.8(3.7)	73.1(3.5)
	1977	83.1(0.9)	83.0(1.3)	83.1(1.1)	84.8(0.9)	75.5(1.9)	69.6(3.9)
Tissues and cells	1992	65.7(1.5)	66.3(1.8)	65.1(1.9)	67.5(1.7)	58.3(4.8)	61.3(5.6)
	1990	65.7(1.4)	69.5(1.8)	62.4(1.8)	67.1(1.6)	58.6(3.2)	67.5(5.2)
	1986	68.3(1.5)	69.6(1.8)	67.1(1.7)	70.7(1.8)	59.8(3.3)	58.0(4.9)
	1982	63.7(1.5)	64.3(1.9)	63.1(2.0)	65.8(1.7)	54.1(2.8)	57.0(6.1)
	1977	65.2(1.2)	67.0(1.7)	63.5(1.4)	66.9(1.4)	54.8(2.1)	60.3(3.6)
Melting crushed ice	1992	64.3(1.4)	70.8(1.7)	57.5(1.9)	69.4(1.5)	39.1(3.9)	55.7(5.1)
	1990	64.6(1.9)	70.3(2.2)	58.8(2.2)	70.3(1.7)	41.2(6.0)	52.9(6.7)
	1986	59.3(1.2)	66.3(1.4)	52.8(2.0)	63.9(1.3)	39.6(3.7)	41.6(5.1)
	1982	61.6(1.4)	69.1(1.3)	54.8(2.0)	66.9(1.4)	35.5(3.0)	37.7(4.5)
	1977	61.2(1.3)	70.5(1.8)	52.2(1.5)	65.6(1.1)	31.4(2.5)	51.1(4.8)
Function of red blood cells	1992	60.5(1.1)	61.7(1.7)	59.4(1.8)	63.0(1.3)	52.7(3.8)	53.5(4.4)
	1990	64.4(1.2)	68.8(1.6)	60.6(1.7)	66.5(1.3)	55.0(3.4)	62.7(6.2)
	1986	63.8(1.4)	67.0(1.5)	60.7(2.6)	63.5(1.6)	67.2(4.1)	60.2(5.2)
	1982	64.5(2.0)	69.2(1.9)	60.2(2.6)	66.1(1.7)	58.9(4.9)	56.0(8.9)
	1977	65.9(1.2)	69.2(1.7)	62.7(1.8)	66.2(1.3)	60.3(3.6)	67.4(5.5)
Water temperature for swimming	1992	46.0(1.3)	53.9(1.9)	37.6(1.5)	51.2(1.5)	27.0(3.5)	26.4(3.7)
	1990	44.5(1.7)	51.3(1.8)	37.7(1.9)	49.4(2.0)	25.4(3.3)	26.4(4.1)
	1986	46.8(1.2)	54.5(1.9)	39.8(1.6)	51.7(1.3)	28.8(2.6)	24.5(3.4)
	1977	48.1(1.5)	58.6(1.9)	37.8(1.8)	52.2(1.6)	22.7(3.4)	41.2(6.2)
Sulfur dioxide and acid rain	1992	71.1(1.0)	76.5(1.5)	65.5(1.3)	75.6(1.1)	51.1(4.4)	60.6(5.9)
	1990	71.1(1.6)	77.3(1.9)	64.9(1.8)	76.4(1.2)	53.6(4.1)	51.2(***)
	1986	65.2(1.0)	72.2(1.7)	58.8(1.6)	69.1(1.2)	51.4(3.4)	44.4(4.7)
	1982	44.7(1.5)	56.5(2.2)	34.2(1.9)	47.9(1.6)	26.1(2.9)	38.0(4.5)
	1977	31.0(2.0)	39.7(2.2)	22.3(1.9)	33.5(2.3)	17.9(2.3)	18.1(3.6)
Seed germination	1992	31.3(1.1)	37.6(1.5)	25.1(1.5)	32.3(1.1)	29.3(3.1)	26.0(3.5)
	1990	34.1(1.2)	37.3(1.6)	31.2(1.5)	35.3(1.6)	29.1(2.7)	30.3(4.7)
	1986	38.8(1.6)	43.6(2.4)	34.0(1.4)	40.2(1.9)	37.6(3.0)	27.5(3.8)
	1982	33.7(1.3)	36.4(1.7)	30.9(2.1)	35.1(1.4)	27.7(3.6)	25.8(4.9)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Efficient use of grain as food	1992	26.4(1.2)	28.6(1.6)	24.2(1.8)	29.2(1.4)	17.8(1.9)	19.7(3.9)
	1990	22.9(1.0)	24.8(1.4)	21.3(1.4)	25.4(1.1)	15.0(2.2)	17.8(3.7)
	1986	25.6(1.4)	27.9(2.1)	23.2(1.7)	28.0(1.7)	13.3(1.8)	26.1(5.1)
	1982	29.7(1.9)	33.3(2.2)	26.3(2.1)	30.8(2.2)	25.0(2.1)	31.2(8.8)
	1977	32.0(0.9)	35.6(1.6)	28.5(1.0)	33.6(1.1)	23.4(2.8)	25.2(5.3)
World population growth	1992	17.7(1.1)	25.2(1.9)	10.1(0.9)	21.0(1.4)	6.2(1.2)	10.2(2.5)
	1990	17.8(1.0)	24.3(1.6)	12.1(1.1)	20.6(1.1)	10.3(1.9)	10.3(2.3)
	1986	19.3(1.7)	23.9(2.5)	14.7(1.5)	21.2(2.0)	10.4(2.0)	15.0(3.8)
	1982	18.9(1.0)	25.1(1.6)	13.1(1.1)	21.4(1.2)	8.4(1.9)	6.6(1.7)
	1977	22.4(1.2)	29.5(1.7)	15.4(1.3)	24.8(1.2)	9.1(1.6)	10.9(4.1)
Saving resources: Insulation	1992	77.1(1.0)	80.2(1.4)	74.1(1.7)	81.2(0.9)	68.9(2.8)	63.1(4.0)
	1990	74.0(1.2)	76.6(1.5)	71.8(1.4)	75.7(1.4)	71.2(2.4)	66.5(4.1)
	1986	82.9(1.2)	83.7(1.8)	82.1(1.6)	83.1(1.5)	84.0(2.6)	80.3(2.8)
	1982	90.0(1.0)	90.7(1.5)	89.2(1.2)	91.2(1.2)	84.0(2.1)	90.9(2.5)
	1977	94.2(0.5)	95.2(0.7)	93.2(0.7)	95.8(0.5)	86.8(1.8)	84.1(3.1)
Saving resources: Planting	1992	76.2(1.1)	77.2(1.4)	75.2(1.7)	78.3(1.2)	68.6(3.8)	73.7(3.5)
	1990	76.9(1.2)	79.8(1.4)	74.3(1.9)	80.4(1.3)	64.2(3.2)	70.0(4.5)
	1986	71.1(1.6)	74.5(1.9)	67.8(2.0)	74.7(2.1)	55.7(4.1)	62.3(4.7)
	1982	64.0(1.0)	64.3(1.6)	63.7(1.8)	66.9(1.2)	49.5(3.0)	57.5(6.9)
	1977	79.8(0.8)	82.6(0.9)	77.1(1.2)	82.5(0.7)	61.7(2.5)	77.3(2.9)
Saving resources: Throwaways	1992	74.6(1.2)	73.9(1.6)	75.4(1.7)	80.9(1.0)	58.2(4.2)	57.0(5.6)
	1990	73.0(1.2)	74.1(1.3)	72.0(1.7)	77.4(1.1)	58.1(3.0)	64.7(4.9)
	1986	67.2(1.3)	69.9(1.8)	64.4(1.4)	70.4(1.6)	55.3(2.4)	55.1(3.6)
	1982	68.7(1.5)	69.9(2.2)	67.5(2.0)	72.0(1.6)	50.6(1.7)	58.8(3.7)
	1977	72.9(0.8)	76.5(1.2)	69.4(1.0)	76.3(0.9)	52.8(2.7)	64.5(4.7)
Saving resources: Lawns	1992	69.2(1.4)	71.7(1.9)	66.7(1.9)	73.5(1.6)	53.4(3.3)	65.6(5.8)
	1990	67.8(1.6)	68.6(1.8)	67.2(2.1)	73.3(1.2)	47.8(3.9)	62.9(3.6)
	1986	69.4(1.6)	69.5(1.9)	69.3(1.9)	73.6(1.7)	50.6(3.6)	60.5(8.1)
	1982	71.0(1.3)	74.4(1.6)	67.4(1.6)	74.5(1.4)	53.3(3.1)	64.5(6.1)
	1977	63.4(1.4)	65.6(2.0)	61.2(1.8)	66.1(1.5)	45.3(3.2)	60.8(5.9)
Plate tectonics: Mountains	1992	74.9(1.5)	79.4(2.1)	70.4(1.8)	79.1(1.4)	58.9(4.1)	65.5(6.3)
	1990	73.8(1.6)	76.5(1.6)	71.4(2.2)	79.4(1.4)	51.2(3.5)	66.0(5.6)
	1986	72.5(1.3)	74.5(2.0)	70.5(1.5)	77.6(1.5)	49.8(3.1)	59.0(8.7)
	1982	69.4(1.5)	72.3(1.8)	66.4(2.3)	72.8(1.6)	50.1(3.3)	63.7(4.3)
	1977	79.1(1.0)	80.4(1.3)	77.8(1.3)	81.8(0.9)	59.4(2.6)	78.1(5.1)
Plate tectonics: Weather	1992	77.0(1.2)	80.3(1.5)	73.7(1.4)	80.9(1.2)	66.6(3.7)	65.9(4.7)
	1990	76.8(1.5)	78.5(1.6)	75.3(2.1)	82.9(1.2)	58.6(4.7)	60.0(4.5)
	1986	73.9(1.6)	75.1(2.0)	72.6(1.6)	78.3(1.5)	55.1(4.9)	63.8(7.3)
	1982	72.0(1.3)	75.8(1.6)	68.1(1.7)	75.7(1.6)	57.7(2.3)	54.1(4.1)
	1977	65.6(1.2)	69.1(1.5)	62.2(1.7)	69.6(1.3)	41.3(2.0)	53.0(3.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Plate tectonics: Earthquakes	1992	90.9(0.7)	91.3(0.9)	90.5(1.1)	93.2(0.7)	83.2(2.1)	86.4(3.0)
	1990	90.3(1.0)	88.9(1.5)	91.5(1.0)	92.7(0.8)	80.7(4.6)	88.4(2.4)
	1986	88.8(0.9)	89.9(1.7)	87.8(1.2)	92.0(0.9)	72.7(3.0)	84.8(6.0)
	1982	89.1(0.9)	89.4(1.3)	88.9(1.1)	91.1(0.9)	78.5(2.4)	84.5(4.5)
	1977	91.2(0.6)	91.9(0.8)	90.6(0.8)	93.3(0.5)	77.8(2.1)	85.1(4.8)
Plate tectonics: Continents	1992	84.9(1.1)	87.8(1.1)	82.0(1.5)	89.1(0.9)	69.6(3.8)	79.1(4.0)
	1990	83.2(1.3)	83.4(1.5)	83.1(1.8)	88.5(0.9)	64.1(3.3)	72.8(4.2)
	1986	80.9(1.3)	82.6(1.8)	79.3(1.5)	85.8(1.4)	61.1(3.9)	64.9(6.1)
	1982	76.7(1.6)	78.7(1.9)	74.7(2.3)	81.2(1.5)	54.5(3.8)	60.9(5.9)
	1977	80.9(1.3)	80.8(1.3)	81.0(1.5)	85.8(0.9)	54.0(3.0)	59.5(3.7)
Plate tectonics: Moon	1992	84.9(1.2)	86.5(1.4)	83.2(1.7)	88.3(1.1)	73.5(4.3)	78.8(5.1)
	1990	83.2(1.4)	82.1(1.6)	84.1(1.7)	88.5(1.0)	63.6(3.8)	75.8(4.1)
	1986	81.0(1.6)	81.0(2.4)	81.0(1.4)	85.1(1.3)	61.6(6.8)	76.5(5.5)
	1982	84.1(1.1)	84.1(1.4)	84.1(1.4)	87.6(1.0)	66.6(2.9)	73.7(3.6)
	1977	73.3(1.0)	72.1(1.3)	74.5(1.3)	76.4(1.2)	55.7(2.4)	59.4(3.4)
Components of solar system	1992	77.9(1.4)	82.4(1.5)	73.4(1.8)	81.0(1.4)	61.6(3.7)	80.7(3.8)
	1990	72.4(1.3)	76.0(1.5)	69.3(1.5)	74.4(1.5)	63.7(2.9)	70.5(3.2)
	1986	72.7(1.8)	79.9(1.7)	65.5(2.6)	75.8(2.0)	57.8(4.3)	68.5(3.4)
	1982	69.7(1.5)	75.2(1.7)	64.5(1.7)	73.2(1.6)	53.3(4.0)	55.3(4.9)
	1977	78.3(0.9)	83.1(1.1)	73.7(1.3)	80.7(1.0)	62.9(2.1)	76.9(3.4)
Weather: Wind speed	1992	93.2(0.8)	92.6(1.1)	93.7(1.2)	95.6(0.4)	85.2(2.9)	90.7(3.7)
	1990	92.9(1.0)	91.5(1.4)	94.2(0.9)	95.4(0.7)	85.7(3.2)	83.0(4.9)
	1986	92.8(1.2)	91.1(1.6)	94.5(1.2)	94.8(0.9)	82.4(5.5)	89.6(2.3)
	1982	84.7(1.2)	85.1(1.3)	84.4(1.7)	87.6(1.1)	68.4(2.5)	79.5(4.4)
	1977	94.0(0.7)	94.7(0.7)	93.2(0.9)	95.3(0.6)	85.7(2.6)	90.6(2.4)
Weather: Sunrise	1992	63.1(1.5)	62.2(2.0)	64.0(2.0)	63.2(1.5)	62.1(2.1)	67.8(5.2)
	1990	63.1(1.2)	59.7(1.6)	66.1(1.6)	65.8(1.1)	54.5(4.1)	54.4(3.9)
	1986	61.7(1.3)	62.9(1.7)	60.5(1.9)	63.5(1.4)	51.5(2.6)	54.7(3.8)
	1982	50.7(1.6)	51.3(1.7)	50.1(2.0)	50.3(2.0)	51.9(2.7)	55.1(5.7)
	1977	56.2(1.4)	53.0(1.6)	59.4(1.8)	57.4(1.5)	48.1(3.1)	49.5(4.4)
Weather: Rainfall	1992	85.4(1.0)	85.2(1.3)	85.5(1.4)	89.3(0.8)	69.2(3.4)	84.0(4.0)
	1990	84.0(1.5)	84.7(1.7)	83.4(1.7)	88.4(1.0)	73.9(3.7)	67.1(5.9)
	1986	84.9(1.0)	85.9(1.4)	83.9(1.3)	87.8(0.9)	74.3(3.4)	75.7(4.5)
	1982	82.2(1.4)	83.1(1.5)	81.4(1.8)	86.7(1.2)	58.2(2.1)	73.3(8.2)
	1977	89.9(0.7)	90.8(0.9)	89.1(0.8)	92.3(0.6)	75.7(3.1)	84.0(3.1)
Weather: Humidity	1992	90.4(0.8)	89.2(1.1)	91.6(1.0)	92.9(0.8)	82.9(2.8)	86.4(2.5)
	1990	90.1(0.8)	88.5(1.1)	91.6(1.0)	93.2(0.7)	81.3(3.0)	81.2(3.4)
	1986	90.4(0.8)	88.6(1.0)	92.1(1.0)	92.0(1.0)	83.6(3.0)	82.8(2.4)
	1982	78.5(1.2)	80.9(1.6)	76.3(1.6)	82.1(1.1)	62.8(2.3)	62.9(4.5)
	1977	89.4(0.6)	89.1(0.9)	89.7(0.9)	91.2(0.7)	80.2(1.9)	78.2(3.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Weather: First day of spring	1992	71.8(1.3)	73.8(1.8)	69.8(1.7)	73.4(1.4)	64.8(4.9)	72.6(3.6)
	1990	71.0(1.3)	70.4(1.6)	71.5(1.7)	75.6(1.1)	55.4(3.6)	58.4(4.4)
	1986	68.1(1.3)	70.3(1.6)	65.9(1.8)	71.0(1.6)	57.0(5.3)	58.8(4.7)
	1982	62.6(1.4)	64.0(1.9)	61.3(1.8)	64.3(1.6)	57.9(2.3)	52.6(4.5)
	1977	68.2(1.0)	69.1(1.5)	67.4(1.6)	70.7(1.0)	56.4(2.4)	51.5(4.9)
Weater: Average temperature	1992	67.4(1.3)	67.5(1.8)	67.2(1.6)	71.5(1.4)	57.4(3.3)	57.8(5.4)
	1990	65.6(1.5)	65.8(2.2)	65.4(1.8)	68.5(1.4)	61.1(4.2)	52.7(5.1)
	1986	64.8(1.4)	65.9(1.9)	63.6(1.6)	67.0(1.7)	58.5(3.3)	51.7(2.3)
	1982	62.5(1.2)	65.3(1.0)	59.8(1.9)	65.0(1.4)	48.2(2.8)	54.6(3.5)
	1977	71.8(0.9)	73.3(1.3)	70.3(1.2)	74.0(0.9)	59.8(3.9)	61.2(4.4)
Communicating on the moon	1992	70.7(1.6)	79.8(1.7)	61.5(2.3)	72.1(1.8)	65.1(3.1)	70.1(3.2)
	1990	68.0(1.1)	78.1(1.3)	59.0(1.5)	70.3(1.2)	58.3(3.0)	71.8(4.3)
	1986	69.8(1.3)	78.7(1.3)	60.7(1.9)	71.3(1.3)	62.2(3.4)	66.9(5.1)
	1982	68.0(1.8)	75.8(2.5)	59.8(2.1)	70.5(1.9)	50.2(3.6)	70.9(5.9)
	1977	69.5(1.2)	78.6(1.3)	60.4(1.7)	71.5(1.1)	57.2(3.1)	59.0(8.7)
Half-life	1992	67.9(1.3)	70.2(1.9)	65.7(2.1)	71.0(1.7)	56.9(4.9)	63.9(4.8)
	1990	66.1(1.4)	68.1(1.3)	64.3(2.0)	68.4(1.5)	56.8(4.3)	63.5(2.9)
	1986	66.5(1.5)	68.2(1.9)	64.7(1.8)	67.6(1.4)	60.8(5.9)	66.2(2.9)
	1982	58.8(1.8)	62.8(2.1)	55.2(2.2)	58.8(1.9)	59.3(4.6)	66.0(6.9)
	1977	59.8(1.3)	62.2(1.6)	57.4(1.8)	60.8(1.6)	51.9(2.8)	55.8(5.9)
Speed of light and sound	1992	33.0(1.4)	38.2(1.7)	27.9(1.9)	37.7(1.5)	17.3(2.7)	17.7(4.7)
	1990	30.8(1.2)	36.3(1.8)	25.9(1.7)	33.8(1.2)	23.0(3.3)	19.0(3.1)
	1986	30.4(1.7)	38.0(2.8)	22.7(1.3)	33.0(2.1)	16.6(2.5)	21.5(5.8)
	1977	31.1(1.2)	38.1(1.3)	24.3(1.4)	33.9(1.3)	15.8(2.0)	18.2(4.3)
Angle of reflection	1992	62.2(1.5)	72.5(1.5)	51.9(1.8)	64.7(1.6)	51.9(4.1)	59.6(4.6)
	1990	58.6(1.2)	70.6(1.6)	47.9(1.7)	61.3(1.3)	51.4(3.5)	47.7(3.6)
	1986	58.1(2.0)	68.4(2.3)	47.8(2.6)	59.6(2.3)	49.6(5.1)	56.6(4.2)
	1982	57.8(1.7)	67.0(2.3)	49.6(2.1)	60.4(2.0)	44.3(3.2)	48.9(2.9)
	1977	55.7(1.1)	66.2(1.4)	45.5(1.5)	57.8(1.3)	43.6(2.4)	48.0(3.0)
Earth's crust: Oldest layers	1992	51.7(1.3)	52.1(2.0)	51.3(1.7)	53.9(1.6)	44.1(3.5)	47.3(4.9)
	1990	54.2(1.3)	55.0(1.8)	53.5(1.6)	58.1(1.2)	44.0(4.1)	43.2(4.3)
	1986	51.1(2.3)	48.1(2.5)	54.2(2.8)	53.6(2.6)	37.9(4.3)	52.0(3.4)
	1977	47.6(1.4)	45.1(1.7)	50.2(1.8)	49.9(1.5)	32.9(2.3)	46.1(5.6)
Earth's crust: Curved layers	1992	50.6(1.4)	56.4(1.6)	44.9(1.8)	52.0(1.6)	38.7(2.9)	60.9(5.4)
	1990	48.3(1.3)	55.4(1.8)	42.0(1.7)	50.4(1.3)	39.2(3.3)	47.1(4.6)
	1986	50.8(1.3)	59.3(2.1)	42.2(2.0)	51.0(1.4)	47.6(2.7)	55.1(4.8)
	1977	48.7(1.4)	56.1(1.5)	41.4(1.7)	49.7(1.6)	41.4(2.4)	49.8(3.8)
Discovery: Computers	1992	69.8(1.2)	73.0(1.7)	66.5(2.1)	71.9(1.4)	61.8(3.6)	66.6(3.7)
	1990	70.8(1.3)	74.9(1.6)	67.1(1.9)	72.7(1.3)	63.8(2.9)	68.6(4.8)
	1986	72.5(1.2)	75.9(1.6)	69.0(1.4)	75.0(1.4)	63.5(4.4)	66.2(3.5)
	1982	67.3(1.3)	72.4(1.2)	62.7(2.0)	69.8(1.5)	55.5(2.8)	56.7(4.2)
	1977	69.4(1.4)	76.8(1.5)	61.8(2.0)	70.0(1.6)	63.3(2.9)	72.9(3.6)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Discovery: Space	1992	58.2(1.1)	58.0(1.8)	58.4(1.7)	59.8(1.4)	52.8(4.4)	54.5(6.2)
	1990	57.1(1.5)	58.5(2.2)	55.8(1.7)	58.3(1.6)	55.6(2.7)	48.8(4.5)
	1986	52.9(1.7)	54.9(2.2)	51.0(2.5)	53.2(1.8)	52.5(3.1)	56.3(5.2)
	1982	46.7(1.7)	47.3(1.9)	46.2(2.3)	47.3(2.0)	43.0(3.0)	51.1(5.2)
	1977	56.6(1.7)	60.1(1.4)	53.0(2.8)	57.9(2.0)	50.8(3.1)	45.3(4.8)
Discovery: Plastics	1992	67.8(1.3)	70.8(1.7)	64.7(1.8)	70.8(1.3)	58.9(4.9)	59.5(5.8)
	1990	66.8(1.5)	69.7(1.9)	64.2(1.9)	71.4(1.5)	53.7(3.0)	57.8(4.6)
	1986	68.0(1.5)	67.8(1.8)	68.2(2.0)	71.4(1.9)	52.4(3.9)	60.3(4.4)
	1982	68.4(1.5)	70.8(2.1)	66.2(1.9)	71.2(1.6)	54.8(3.1)	61.6(6.0)
	1977	69.0(1.4)	69.7(1.7)	68.3(2.0)	71.9(1.4)	52.9(3.5)	62.8(6.2)
Discovery: Lasers	1992	88.0(0.8)	88.2(1.1)	87.8(0.8)	90.9(0.7)	78.2(3.5)	83.6(5.7)
	1990	85.9(1.3)	87.1(1.4)	84.9(1.7)	89.5(1.1)	78.9(3.3)	76.3(3.5)
	1986	86.7(0.8)	87.6(1.7)	85.9(0.9)	90.0(0.9)	72.5(3.3)	82.3(2.6)
	1982	77.6(1.3)	79.9(1.7)	75.6(1.7)	81.4(1.4)	58.0(2.6)	65.3(3.5)
	1977	64.3(1.3)	67.7(2.0)	60.9(1.5)	66.1(1.4)	51.2(3.5)	69.1(4.9)
Effect of clearing forests	1992	40.3(1.2)	42.8(1.8)	37.8(1.5)	45.9(1.6)	24.8(2.7)	21.3(4.5)
	1990	39.6(1.6)	43.7(2.1)	35.9(1.8)	45.0(1.4)	22.4(3.2)	22.9(4.7)
	1986	46.1(1.5)	52.3(2.5)	39.7(1.8)	50.5(1.7)	27.9(2.3)	34.9(4.7)
	1982	53.0(1.4)	58.6(2.0)	47.6(1.4)	58.9(1.6)	28.2(2.1)	24.7(5.9)
	1977	60.2(1.4)	64.5(1.5)	55.9(1.9)	66.1(1.2)	31.8(3.7)	24.9(7.1)
Cause of seasons	1992	29.7(1.2)	36.5(1.6)	22.8(1.6)	31.9(1.8)	18.9(2.7)	32.0(3.6)
	1990	26.2(1.4)	30.9(1.7)	21.9(1.6)	27.8(1.5)	20.0(3.2)	22.3(3.3)
	1986	26.5(1.7)	32.9(2.6)	20.0(1.4)	28.3(1.9)	15.7(3.0)	25.5(3.5)
	1977	26.9(0.9)	30.7(1.3)	23.2(1.4)	28.7(1.1)	16.1(1.8)	23.9(5.0)
Product Z: Arthritis	1992	76.1(1.2)	73.5(1.6)	78.8(1.3)	80.5(1.2)	57.2(3.1)	70.7(3.7)
	1990	76.9(1.5)	76.2(1.9)	77.6(1.4)	82.9(1.2)	59.4(4.7)	57.8(5.0)
	1986	76.2(1.3)	76.1(1.8)	76.4(1.5)	81.2(1.4)	58.0(3.1)	60.9(6.9)
	1982	69.4(1.1)	68.1(1.7)	70.8(1.5)	75.4(1.0)	41.3(3.1)	46.5(3.2)
	1977	76.7(1.1)	73.2(1.9)	80.2(1.2)	81.5(1.0)	47.5(3.1)	62.9(4.2)
Product Z: Harm	1992	89.0(0.8)	87.0(1.3)	91.2(0.9)	91.5(0.7)	79.9(2.9)	80.9(3.2)
	1990	88.8(0.9)	87.7(1.2)	89.9(1.2)	91.9(0.7)	76.7(2.9)	83.5(3.6)
	1986	88.6(0.8)	88.2(1.2)	89.0(1.1)	90.3(1.0)	83.0(2.4)	79.3(3.2)
	1982	90.8(0.9)	88.3(1.4)	93.3(1.1)	92.8(0.8)	79.1(3.2)	89.5(2.5)
	1977	87.9(0.9)	86.6(1.4)	89.3(0.8)	90.8(0.8)	70.0(2.8)	82.1(3.5)
Product Z: Pain relief	1992	91.6(0.8)	90.1(1.1)	93.2(1.0)	93.7(0.7)	83.7(3.3)	85.7(3.2)
	1990	91.9(0.8)	89.4(1.2)	94.3(0.7)	93.2(0.6)	89.2(1.6)	81.2(6.1)
	1986	93.0(0.6)	91.5(1.0)	94.3(1.1)	94.2(0.6)	90.4(1.6)	81.9(6.2)
	1982	90.9(0.9)	88.5(1.2)	93.3(1.0)	93.3(0.6)	79.7(3.1)	82.6(5.4)
	1977	91.0(0.6)	88.3(0.9)	93.7(0.7)	93.5(0.4)	74.8(2.8)	87.3(2.8)

The standard errors of the estimated percentages appear in parentheses.

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Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Product Z: Feel better	1992	91.7(0.7)	89.9(1.0)	93.6(0.9)	93.3(0.7)	87.0(2.3)	84.5(3.2)
	1990	91.3(0.9)	89.8(0.9)	92.8(1.2)	93.8(0.6)	81.2(2.6)	87.3(4.9)
	1986	90.5(0.7)	88.7(1.3)	92.2(0.9)	92.8(0.8)	82.6(1.9)	79.8(3.9)
	1982	91.4(0.7)	89.4(1.1)	93.5(0.8)	94.2(0.7)	76.8(2.6)	87.5(2.8)
	1977	89.0(0.8)	87.3(1.3)	90.7(0.9)	92.2(0.7)	69.1(2.7)	80.0(2.9)
Reading a pressure gauge	1992	85.0(0.8)	87.8(1.2)	82.2(1.1)	87.9(0.8)	74.9(3.0)	83.5(3.6)
	1990	80.5(1.0)	81.6(1.3)	79.6(1.3)	84.2(0.9)	68.4(2.9)	71.2(4.7)
	1986	80.7(1.1)	83.5(1.5)	77.8(1.5)	84.6(1.1)	62.8(4.5)	72.3(2.9)
	1982	78.9(1.2)	83.1(1.5)	74.6(1.7)	82.2(1.3)	62.4(3.8)	69.4(4.6)
	1977	75.0(0.9)	79.1(1.1)	71.0(1.3)	78.8(0.8)	53.4(3.2)	57.3(3.0)
Rain and corn growth	1992	68.6(1.2)	68.8(1.6)	68.5(1.6)	72.4(1.4)	55.3(2.4)	51.5(5.5)
	1990	68.0(1.4)	70.5(2.0)	65.5(1.7)	70.2(1.4)	58.7(4.3)	61.0(7.5)
	1986	66.4(1.2)	68.7(1.7)	64.3(1.9)	69.8(1.2)	53.4(3.5)	53.7(4.6)
	1982	70.3(1.3)	70.3(1.8)	70.3(2.0)	72.9(1.6)	55.5(3.2)	67.4(3.6)
	1977	69.2(1.3)	70.6(1.5)	67.7(1.6)	72.7(1.2)	54.1(3.3)	47.9(4.1)
Food shortage: Birth rate	1992	84.9(1.3)	84.0(1.7)	85.8(1.1)	88.5(1.1)	69.9(5.1)	75.8(3.6)
	1990	83.8(0.9)	83.0(1.2)	84.6(1.3)	86.8(1.1)	73.7(3.4)	69.3(3.4)
	1986	84.9(1.2)	84.4(1.6)	85.3(1.6)	88.3(1.1)	73.9(3.7)	68.3(6.2)
	1982	84.3(1.3)	83.6(1.4)	85.1(1.6)	88.6(1.1)	64.6(3.5)	74.1(2.9)
	1977	94.2(0.6)	93.1(0.8)	95.2(0.7)	95.9(0.4)	85.4(2.3)	83.0(2.6)
Food shortage: Amount of Food	1992	94.7(0.6)	92.6(0.9)	96.9(0.6)	96.1(0.6)	89.8(2.3)	90.6(2.8)
	1990	93.7(0.9)	91.9(1.3)	95.6(0.9)	96.0(0.7)	84.9(2.7)	87.7(4.0)
	1986	95.7(0.5)	95.4(0.9)	95.9(0.7)	96.8(0.5)	90.9(1.5)	94.0(1.8)
	1982	92.0(1.2)	92.2(1.1)	91.8(1.6)	94.3(1.3)	79.8(2.9)	92.1(1.8)
	1977	97.6(0.3)	97.0(0.4)	98.1(0.4)	98.6(0.2)	92.2(1.4)	93.4(2.0)
Food shortage: Markets	1992	66.4(1.2)	64.5(2.0)	68.4(1.6)	71.3(1.3)	49.5(4.1)	50.7(3.3)
	1990	68.0(1.4)	68.9(1.6)	67.0(1.7)	71.3(1.5)	57.6(4.1)	51.8(3.8)
	1986	74.8(1.2)	75.4(1.8)	74.2(1.6)	79.9(1.2)	58.0(3.1)	51.0(6.6)
	1982	71.2(1.1)	72.6(1.4)	69.9(1.4)	76.0(1.0)	48.0(3.7)	54.7(3.6)
	1977	78.2(1.1)	79.4(1.4)	77.0(1.3)	82.1(1.1)	55.6(3.0)	61.9(4.6)
Food shortage: Weather	1992	69.9(1.2)	72.2(1.6)	67.5(1.4)	72.5(1.2)	57.9(3.4)	65.8(4.5)
	1990	71.8(1.2)	72.3(1.8)	71.3(1.4)	76.1(1.4)	58.7(2.5)	55.1(6.0)
	1986	73.5(1.4)	72.3(1.9)	74.5(1.9)	77.2(1.4)	60.4(3.3)	57.7(4.8)
	1982	61.8(1.2)	62.1(1.6)	61.5(1.9)	66.1(1.2)	39.6(2.9)	49.3(4.5)
	1977	77.2(0.7)	77.2(1.4)	77.1(1.3)	79.8(0.8)	61.0(2.8)	74.8(3.6)
Volume equation	1992	85.8(0.9)	84.2(1.3)	87.3(1.3)	88.0(1.1)	78.7(3.4)	81.5(4.6)
	1990	84.2(1.3)	81.4(1.9)	86.8(1.4)	87.6(1.1)	73.8(4.2)	76.4(7.4)
	1986	83.2(1.2)	81.6(2.1)	84.7(1.3)	87.1(1.1)	69.2(4.2)	69.7(3.7)
	1982	75.0(1.3)	73.5(1.6)	76.5(1.7)	79.5(1.4)	57.3(3.6)	51.1(4.1)
	1977	68.2(1.5)	65.4(1.9)	70.9(1.7)	73.1(1.3)	40.9(3.1)	41.9(4.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Meaning of 20% chance of rain	1992	33.9(1.1)	38.4(1.9)	29.4(1.6)	38.2(1.3)	21.1(2.9)	24.6(4.8)
	1990	31.8(1.6)	34.7(1.8)	29.3(2.1)	37.2(1.7)	18.2(2.8)	15.9(3.3)
	1986	30.1(1.9)	36.2(2.6)	24.1(1.9)	34.1(2.1)	18.4(3.6)	11.3(3.4)
	1982	28.5(1.4)	34.3(2.5)	23.0(1.5)	31.6(1.6)	13.8(2.0)	18.9(5.1)
	1977	28.7(1.6)	33.2(1.9)	24.1(1.7)	31.0(1.6)	14.7(2.4)	20.0(5.7)
Poisons in food chains	1992	78.4(1.4)	82.9(1.7)	74.0(1.7)	84.0(1.2)	61.5(4.6)	64.3(7.3)
	1990	80.1(1.4)	81.3(1.8)	79.1(1.6)	85.1(0.8)	64.3(3.8)	73.5(4.6)
	1986	78.1(1.9)	81.6(2.5)	74.5(2.1)	82.5(2.2)	58.5(3.3)	67.3(4.8)
	1977	77.0(1.3)	76.4(1.3)	77.5(1.8)	79.2(1.3)	63.0(4.2)	72.4(4.3)
Inherited/learned: Smiling	1992	55.3(1.3)	59.6(1.5)	51.0(1.9)	55.7(1.5)	51.2(3.0)	60.4(3.7)
	1990	51.4(1.6)	52.2(2.2)	50.7(2.2)	50.6(1.9)	54.0(3.8)	56.0(3.8)
	1986	51.5(1.5)	57.0(2.2)	46.1(2.3)	47.4(1.7)	68.3(3.9)	65.9(4.9)
	1977	44.9(1.1)	48.1(1.9)	41.6(1.4)	42.5(1.2)	55.6(3.9)	57.4(4.9)
Inherited/learned: Swimming	1992	98.1(0.3)	97.5(0.5)	98.7(0.3)	98.6(0.3)	96.4(1.0)	98.7(0.7)
	1990	97.1(0.5)	95.8(1.0)	98.3(0.4)	98.3(0.3)	95.5(1.2)	88.4(3.7)
	1986	97.6(0.5)	96.4(0.9)	98.9(0.4)	97.5(0.6)	97.9(0.5)	98.9(0.9)
	1977	98.2(0.3)	97.6(0.5)	98.8(0.3)	98.1(0.3)	99.0(0.4)	96.3(2.1)
Inherited/learned: Writing	1992	91.6(0.7)	90.4(1.0)	92.8(0.9)	91.9(0.7)	93.1(1.7)	87.8(5.2)
	1990	92.1(0.8)	90.5(1.1)	93.4(0.9)	92.4(0.9)	89.6(1.8)	91.3(2.9)
	1986	93.4(0.8)	93.8(0.9)	93.0(1.1)	93.6(0.9)	93.1(1.1)	94.1(1.9)
	1977	93.0(0.6)	93.4(0.7)	92.6(0.9)	93.4(0.7)	89.3(2.2)	94.1(2.6)
Inherited/learned: Breathing	1992	82.6(0.8)	83.4(1.4)	81.8(1.3)	83.8(1.0)	78.4(1.9)	79.5(3.9)
	1990	82.3(0.9)	83.4(1.3)	81.3(1.4)	83.9(0.8)	76.4(3.4)	81.4(3.0)
	1986	82.8(1.3)	84.0(1.9)	81.6(1.4)	84.7(1.5)	73.5(2.5)	82.1(3.4)
	1977	84.8(1.0)	85.4(1.2)	84.1(1.3)	85.3(1.2)	80.8(2.0)	84.0(4.8)
Why publish? Share findings	1992	81.3(1.1)	81.3(1.5)	81.4(1.6)	84.2(1.2)	69.3(3.8)	78.3(3.3)
	1990	79.4(1.1)	77.2(1.6)	81.4(1.2)	81.7(1.3)	72.2(3.2)	70.0(3.7)
	1986	79.9(1.0)	79.8(1.7)	80.1(1.2)	81.7(1.0)	74.3(4.8)	69.3(3.2)
	1977	76.9(1.5)	75.7(1.6)	78.2(2.0)	77.8(1.5)	71.8(2.8)	74.1(4.4)
Why publish? Check findings	1992	76.5(1.3)	75.1(1.7)	78.0(1.5)	78.7(1.6)	67.4(2.3)	75.1(3.6)
	1990	76.0(1.1)	74.3(1.3)	77.4(1.4)	78.5(1.2)	67.5(4.6)	68.7(4.2)
	1986	74.1(1.4)	71.2(1.7)	77.1(1.8)	75.4(1.6)	68.8(2.9)	74.5(4.6)
	1977	79.8(1.0)	77.5(1.6)	82.2(1.1)	80.4(1.0)	77.8(2.2)	79.1(4.6)
Why publish? Add to knowledge	1992	83.1(1.0)	81.9(1.6)	84.2(1.3)	85.3(1.2)	75.1(3.4)	77.5(2.0)
	1990	82.9(1.1)	82.2(1.2)	83.5(1.5)	85.0(0.9)	74.4(4.0)	82.7(3.6)
	1986	84.6(1.0)	84.1(1.7)	85.2(1.2)	85.5(1.0)	84.0(2.6)	77.8(3.9)
	1977	85.1(0.7)	83.8(1.0)	86.4(0.9)	86.1(0.8)	81.3(2.0)	80.2(3.2)
Ocean currents and climate	1992	32.6(1.5)	36.7(2.1)	28.6(1.7)	36.6(1.5)	20.5(2.1)	20.5(5.1)
	1990	31.6(1.4)	36.5(2.1)	27.2(1.4)	36.4(1.4)	15.5(2.6)	22.6(3.1)
	1986	27.8(1.6)	31.3(2.5)	24.4(1.7)	31.1(1.9)	16.5(2.4)	12.2(1.9)
	1977	42.0(1.6)	50.0(2.0)	34.6(1.6)	45.3(1.6)	21.9(1.8)	26.3(3.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Energy content of foods	1992	6.7(0.6)	7.5(0.8)	5.9(0.8)	5.6(0.7)	7.8(1.5)	9.3(2.9)
	1990	6.2(0.7)	7.2(1.0)	5.3(0.8)	6.2(0.8)	8.7(1.7)	1.4(0.9)
	1986	6.4(0.7)	6.6(1.0)	6.2(0.8)	5.8(0.8)	8.0(2.3)	8.3(2.8)
	1977	4.4(0.5)	5.3(0.8)	3.6(0.5)	4.0(0.5)	6.4(1.1)	7.6(3.3)
Heating a copper wire	1992	65.0(1.3)	70.3(1.9)	59.8(1.5)	66.4(1.4)	58.7(3.5)	62.0(7.9)
	1990	65.4(1.0)	69.2(1.2)	62.1(1.6)	66.5(1.2)	62.2(3.3)	64.3(2.6)
	1986	66.0(1.1)	68.7(1.4)	63.2(2.0)	67.7(1.3)	59.0(3.5)	59.1(4.4)
	1982	67.9(1.9)	68.5(2.2)	67.3(2.6)	68.0(2.2)	69.4(3.0)	63.6(3.4)
	1977	69.3(1.0)	71.8(1.3)	66.9(1.4)	70.2(1.2)	64.3(2.2)	67.7(4.6)
Voltage between two points	1992	65.4(1.3)	68.2(1.7)	62.6(1.6)	70.4(1.3)	53.3(2.6)	48.6(8.3)
	1990	66.3(1.4)	67.8(1.6)	65.0(1.7)	71.1(1.2)	51.4(1.9)	57.1(5.0)
	1986	66.7(1.2)	68.3(1.5)	65.1(2.1)	70.6(1.5)	48.6(3.0)	61.6(4.5)
	1982	66.1(1.5)	67.1(2.1)	65.2(1.6)	68.5(1.6)	53.9(3.0)	64.8(8.1)
	1977	61.4(1.0)	63.1(1.4)	59.7(1.6)	63.4(1.2)	46.3(2.5)	58.8(6.8)
Relative movement: Boy-bike	1992	23.4(1.1)	29.2(1.7)	17.7(1.3)	26.8(1.4)	10.9(3.4)	16.0(4.3)
	1990	22.4(1.1)	27.8(1.6)	17.5(1.2)	25.0(1.2)	11.4(2.3)	16.1(3.1)
	1986	21.6(2.0)	28.3(3.5)	14.8(1.5)	24.0(2.4)	13.4(2.5)	9.5(2.8)
	1977	25.7(1.2)	29.7(1.5)	21.8(1.5)	28.4(1.3)	10.0(2.0)	11.8(2.7)
Relative movement: Boy-car	1992	92.4(0.9)	93.1(0.9)	91.6(1.3)	93.9(0.7)	86.2(2.0)	90.9(5.4)
	1990	90.9(1.0)	91.9(1.3)	90.0(1.2)	93.1(0.8)	83.5(2.9)	85.5(3.2)
	1986	93.0(0.8)	94.0(0.8)	91.9(1.2)	93.8(0.8)	89.3(2.9)	91.7(2.6)
	1977	92.2(0.6)	93.4(0.7)	91.1(1.0)	93.3(0.6)	84.1(2.5)	92.1(3.2)
Relative movement: Car-bike	1992	52.2(1.3)	56.6(1.6)	47.8(1.5)	56.3(1.5)	42.1(2.4)	38.2(3.5)
	1990	49.1(1.2)	53.3(1.4)	45.5(1.7)	52.1(1.2)	36.8(2.5)	48.2(5.8)
	1986	48.2(1.6)	53.7(2.5)	42.7(2.0)	51.7(2.1)	34.2(3.1)	34.1(5.1)
	1977	60.7(1.0)	61.9(1.4)	59.4(1.4)	63.7(1.0)	43.3(2.5)	45.3(4.6)
Relative movement: Boy-tree	1992	90.1(0.7)	89.1(1.0)	91.0(1.0)	91.2(0.7)	86.6(2.7)	86.8(5.1)
	1990	89.9(0.8)	91.1(1.0)	88.9(1.1)	91.2(0.9)	85.8(2.2)	85.3(4.4)
	1986	90.6(0.7)	91.9(0.9)	89.3(1.1)	91.5(0.8)	85.7(2.3)	92.4(1.9)
	1977	90.0(0.7)	90.4(0.9)	89.7(0.8)	90.8(0.7)	83.8(1.9)	90.8(4.1)
Temperature affects pressure	1992	45.7(1.5)	53.9(1.7)	37.6(2.4)	51.6(1.7)	22.7(3.1)	37.7(4.6)
	1990	43.0(1.5)	53.3(1.9)	33.8(1.9)	48.6(1.5)	26.2(2.9)	25.0(3.2)
	1986	43.5(1.6)	57.9(2.3)	29.0(1.5)	47.7(1.5)	25.7(4.3)	31.1(3.7)
	1977	45.1(1.5)	58.5(1.7)	32.7(1.8)	49.1(1.4)	19.6(2.0)	33.1(5.6)
Beam of electrons in TV screen	1992	40.4(1.3)	41.4(1.9)	39.3(2.0)	44.4(1.6)	32.2(3.4)	24.3(3.8)
	1990	37.1(1.1)	39.4(1.6)	35.0(1.6)	38.3(1.1)	34.3(3.3)	29.9(2.4)
	1986	33.7(1.2)	37.0(1.9)	30.3(1.3)	35.7(1.4)	23.9(3.5)	28.4(6.1)
	1977	34.2(1.2)	39.3(1.8)	29.5(1.4)	34.4(1.3)	33.2(3.3)	31.9(4.3)
Acceleration of wagon on hill	1992	28.9(1.4)	37.4(1.4)	20.4(2.0)	34.0(1.7)	13.7(2.8)	13.7(3.0)
	1990	28.3(1.3)	35.3(1.6)	22.2(1.5)	32.6(1.5)	11.9(2.1)	20.5(4.2)
	1986	28.6(1.6)	38.0(2.9)	19.2(1.3)	32.2(1.7)	13.3(3.0)	17.2(2.5)
	1977	26.0(1.1)	35.8(1.3)	16.3(1.3)	29.1(1.1)	9.2(1.7)	13.6(2.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Light bulbs in series	1992	29.4(1.3)	33.6(2.0)	25.3(1.7)	34.7(1.3)	11.6(1.7)	20.7(3.4)
	1990	28.3(1.4)	35.5(1.7)	22.0(1.5)	31.8(1.5)	14.5(2.1)	24.4(3.9)
	1986	24.5(1.3)	32.2(1.9)	16.9(1.3)	26.7(1.3)	15.6(3.6)	19.7(3.2)
	1977	25.4(1.1)	32.0(1.6)	19.0(1.3)	27.8(1.2)	11.2(2.1)	19.3(4.0)
Interpret a chemical formula	1992	59.5(1.2)	58.4(2.0)	60.7(1.5)	62.4(1.4)	48.5(3.7)	45.6(4.0)
	1990	57.4(1.3)	58.6(1.7)	56.3(1.8)	60.1(1.3)	53.8(2.8)	39.8(6.6)
	1986	56.3(1.4)	57.9(2.2)	54.9(1.7)	59.7(1.6)	46.2(3.6)	42.9(5.4)
	1977	44.6(1.7)	46.8(2.3)	42.6(1.7)	47.6(1.7)	28.3(4.1)	32.8(4.8)
Analyzing causes of disease	1992	56.7(1.4)	56.2(1.9)	57.2(1.7)	60.0(1.5)	43.3(3.7)	51.3(2.8)
	1990	54.6(1.6)	53.9(2.2)	55.2(1.6)	57.7(1.9)	40.3(3.6)	49.2(5.4)
	1986	55.7(1.6)	54.9(2.5)	56.5(2.1)	59.7(1.9)	38.3(3.0)	48.6(3.7)
	1977	56.0(1.2)	54.5(1.7)	57.4(1.2)	59.3(1.3)	34.5(2.3)	41.2(4.7)
Neutralize alkali	1992	10.7(0.8)	11.7(1.0)	9.7(1.1)	11.1(0.9)	7.8(2.1)	9.8(2.3)
	1990	10.1(0.8)	11.1(1.1)	9.1(0.9)	10.1(0.8)	9.1(1.8)	7.6(4.2)
	1986	10.6(1.0)	11.5(1.6)	9.9(1.0)	11.1(1.0)	7.7(1.8)	8.9(2.8)
	1977	9.9(0.9)	10.2(1.3)	9.6(1.1)	9.7(1.0)	10.7(1.6)	8.1(3.1)
Ratio of oxygen/copper	1992	49.5(1.6)	50.1(1.9)	48.9(2.0)	52.5(1.8)	33.7(4.2)	43.9(4.7)
	1990	47.3(1.9)	47.6(2.3)	46.9(2.1)	49.6(1.9)	37.1(6.1)	36.6(8.1)
	1986	43.2(1.9)	42.6(2.3)	43.8(2.4)	46.9(2.3)	30.8(4.3)	25.2(5.3)
	1977	37.1(1.8)	39.2(2.4)	35.1(1.7)	39.4(1.6)	22.2(3.9)	24.4(5.8)
Plant experiment: Conclusion	1992	29.5(1.3)	29.7(1.3)	29.2(2.0)	32.5(1.5)	19.3(2.6)	19.9(3.5)
	1990	28.8(1.4)	29.7(2.1)	27.9(1.6)	32.5(1.5)	18.0(2.4)	10.1(3.8)
	1986	31.5(1.8)	31.1(2.4)	31.8(2.2)	35.6(2.0)	17.0(3.3)	14.2(3.1)
	1977	28.7(1.2)	28.3(1.7)	29.0(1.5)	31.3(1.3)	14.0(2.4)	17.1(2.8)
Plant experiment: Control	1992	81.8(1.2)	78.1(1.6)	85.6(1.3)	84.5(1.1)	68.0(3.9)	75.6(3.3)
	1990	79.2(1.2)	74.4(1.7)	84.1(1.3)	81.8(1.0)	70.3(2.8)	68.7(6.5)
	1986	77.9(1.5)	74.0(2.2)	81.4(1.7)	81.7(1.5)	62.2(3.6)	72.0(3.6)
	1977	77.9(1.1)	75.2(1.6)	80.3(1.7)	79.7(1.3)	67.1(2.8)	71.9(4.2)
Formation of chemical product	1992	35.2(1.3)	36.5(1.6)	33.8(1.8)	39.6(1.4)	18.7(2.8)	21.5(3.2)
	1990	36.3(1.5)	39.0(2.1)	33.5(1.8)	39.6(1.4)	22.4(4.7)	28.1(5.4)
	1986	34.2(1.3)	34.2(2.1)	34.2(1.8)	38.4(1.4)	15.9(2.3)	17.6(3.9)
	1977	32.3(1.2)	34.8(1.7)	30.1(1.4)	35.5(1.2)	12.6(2.7)	18.4(4.1)
Energy added to melting ice	1992	33.0(1.2)	33.7(2.0)	32.2(1.2)	35.5(1.3)	21.5(2.5)	26.7(3.9)
	1990	31.2(1.5)	33.5(2.0)	28.9(1.8)	33.4(1.6)	23.5(2.8)	19.9(6.6)
	1986	29.7(1.3)	31.8(1.7)	27.8(1.7)	30.8(1.5)	23.4(2.7)	28.8(3.5)
	1977	30.7(1.2)	33.0(1.4)	28.4(1.4)	32.4(1.2)	18.8(2.4)	29.3(6.4)
Balancing a chemical equation	1992	46.4(1.6)	43.8(2.2)	49.1(1.9)	49.9(1.6)	31.3(4.3)	31.8(5.9)
	1990	45.0(1.8)	43.4(2.3)	46.6(2.2)	47.7(1.7)	35.5(7.1)	29.9(6.0)
	1986	40.3(2.4)	40.5(3.1)	40.1(2.6)	43.6(2.7)	26.9(2.9)	23.3(4.5)
	1977	32.6(1.6)	33.3(1.7)	31.8(2.3)	35.9(1.7)	13.4(2.3)	19.6(5.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Science Trend Assessment — Age 17

Weighted percentage correct by subgroup across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Estimate half-life from graph	1992	33.4(1.7)	36.9(2.1)	29.8(1.9)	36.9(1.9)	20.6(3.0)	16.9(3.5)
	1990	34.1(1.8)	38.3(2.1)	29.9(1.9)	36.7(1.8)	26.8(4.6)	16.2(4.4)
	1986	32.8(1.1)	36.2(1.6)	29.6(1.6)	34.5(1.3)	25.1(3.5)	30.5(3.8)
	1977	26.4(1.2)	31.0(1.7)	22.1(1.2)	28.8(1.2)	13.0(1.5)	14.8(2.6)
Equilibrium reaction	1992	27.9(0.8)	28.3(1.3)	27.4(1.3)	27.5(1.0)	32.0(3.2)	22.8(3.4)
	1990	24.6(1.4)	26.9(2.0)	22.3(1.4)	25.6(1.3)	23.1(3.4)	10.5(3.1)
	1986	28.7(1.4)	31.3(2.2)	26.4(1.7)	29.5(1.6)	24.7(2.8)	26.8(4.4)
	1977	30.6(1.3)	30.1(1.9)	31.0(1.6)	30.8(1.5)	33.4(3.1)	19.9(4.3)

The standard errors of the estimated percentages appear in parentheses.

Data Appendix

Mathematics

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages and proficiency means

	1973	1978	1982	1986	1990	1992	TREND TESTS
TOTAL		100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	219.0(0.8)*	218.6(0.8)*	219.0(1.1)*	221.7(1.0)*	229.6(0.8)†	229.6(0.8)†	LQ
SEX							
Male		49.7(0.5)	49.3(0.6)	50.0(0.6)	49.4(0.6)	48.6(0.6)	
	218.0(0.7)*	217.4(0.7)*	217.1(1.2)*	221.7(1.1)†*	229.1(0.9)†	230.8(1.0)†	LQ
Female		50.3(0.5)	50.7(0.6)	50.0(0.6)	50.6(0.6)	51.4(0.6)	
	220.0(1.1)*	219.9(1.0)*	220.8(1.2)*	221.7(1.2)*	230.2(1.1)†	228.4(1.0)†	LQ
RACE/ETHNICITY							
White		79.4(1.4)	78.6(2.5)	76.5(1.1)	74.5(1.1)†	75.4(0.9)	
	225.0(1.0)*	224.1(0.9)*	224.0(1.1)*	226.9(1.1)*	235.2(0.8)†	235.1(0.8)†	LQ
Black		13.8(1.4)	14.3(2.0)	14.9(0.5)	16.3(0.7)	15.9(0.4)	
	190.0(1.8)*	192.4(1.1)*	194.9(1.6)*	201.6(1.6)†	208.4(2.2)†	208.0(2.0)†	L
Hispanic		5.4(0.7)	5.4(1.1)	6.2(1.1)	5.5(0.6)	5.6(0.8)	
	202.0(2.4)*	202.9(2.2)*	204.0(1.3)*	205.4(2.1)	213.8(2.1)†	211.9(2.3)†	L
Other		1.4(0.2)*	1.7(0.6)	2.5(0.5)	3.8(1.0)	3.0(0.4)†	
		227.2(3.4)*	238.5(3.4)	221.8(7.5)	235.2(3.2)	239.3(3.4)†	N
REGION							
Northeast		22.5(2.5)	21.0(2.7)	21.1(1.1)	23.2(0.9)	20.9(1.2)	
	227.0(1.9)*	226.9(1.9)*	225.7(1.8)*	226.0(2.7)*	235.8(2.1)†	234.8(1.9)†	LQ
Southeast		23.7(2.1)	24.1(2.7)	22.5(4.7)	24.1(0.9)	24.1(1.3)	
	208.0(1.3)*	208.9(1.2)*	210.4(2.5)*	217.8(2.5)†	223.9(2.4)†	221.0(1.7)†	L
Central		30.7(1.8)	27.6(3.8)	28.6(4.0)	24.3(0.6)†*	28.2(0.8)	
	224.0(1.5)*	224.0(1.5)*	221.1(2.7)*	226.0(2.3)*	230.7(1.3)†	233.7(1.6)†	LQ
West		23.1(2.0)	27.3(2.0)	27.7(1.6)	28.4(0.8)†	26.7(0.8)	
	216.0(2.2)*	213.5(1.3)*	219.3(1.8)*	217.2(2.4)*	228.5(1.8)†	229.0(2.3)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978 (1973 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results for 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1973 and the Race/Ethnicity data are available only for White, Black, and Hispanic students for that assessment year.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	26.0(0.9)*	30.4(1.5)*	33.9(1.7)†	34.8(1.4)†	37.6(1.2)†	
	190.9(1.1)*	193.1(1.4)*	198.1(1.0)†*	207.2(1.2)†	208.1(1.2)†	LQ
At Modal Grade	72.3(0.9)*	68.7(1.5)*	65.8(1.7)†	64.8(1.4)†	62.1(1.2)†	
	228.5(0.9)*	230.1(1.0)*	233.8(1.0)†*	241.7(1.0)†	242.5(0.7)†	LQ
Above Modal Grade	0.8(0.2)*	0.5(0.1)	0.3(0.1)†	0.3(0.1)	0.3(0.1)†	
	240.5(7.1)	258.3(9.3)	248.8(10.8)	239.3(8.9)	260.0(5.4)	N
TYPE OF COMMUNITY						
Extreme Rural	8.3(1.5)	11.2(3.5)	4.8(2.2)	7.5(1.6)	9.5(2.9)	
	212.3(2.9)*	210.9(2.6)*	218.8(7.0)	230.5(3.2)†	224.8(2.0)†	L
Disadvantaged Urban	7.3(1.2)	6.6(1.5)	6.0(1.6)	8.8(2.5)	8.2(1.7)	
	198.7(2.9)	198.8(2.2)*	204.2(1.9)	214.4(4.6)†	207.7(2.3)	L
Advantaged Urban	11.5(2.2)	10.1(2.3)	16.8(3.1)	11.8(2.2)	10.8(2.1)	
	237.3(1.8)*	238.9(2.2)*	238.5(2.7)	244.1(1.8)†	247.6(2.5)†	L
Other	73.0(2.5)	72.1(3.9)	72.5(4.1)	71.9(4.0)	71.5(3.9)	
	218.4(0.7)*	219.3(0.9)*	219.4(1.3)*	229.0(0.9)†	230.0(0.9)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	7.9(0.4)*	8.0(0.7)*	4.2(0.4)†	4.9(0.4)†	4.2(0.3)†	
	200.3(1.5)*	199.0(1.7)*	200.6(2.5)*	210.4(2.3)†	216.7(2.2)†	LQ
Graduated H.S.	23.0(0.8)*	25.1(0.8)*	16.4(0.7)†*	16.0(0.7)†*	13.5(0.7)†	
	219.2(1.1)	218.3(1.1)	218.4(1.6)	226.2(1.2)†	222.0(1.5)	L
Some Educ After H.S.	8.8(0.4)	9.4(0.4)*	6.6(0.6)†	7.4(0.4)	7.8(0.4)	
	230.1(1.7)*	225.2(2.1)*	228.6(2.1)*	235.8(2.0)	237.4(1.9)†	LQ
Graduated College	23.6(1.1)*	30.1(1.5)†*	37.8(1.1)†	40.1(1.1)†	41.5(1.2)†	
	231.3(1.1)*	228.8(1.5)*	231.3(1.1)*	237.6(1.3)†	236.2(1.0)†	LQ
Unknown	36.8(1.5)	27.3(1.1)†*	34.9(1.0)	31.7(0.8)†	33.0(0.8)	
	211.4(1.1)*	212.6(1.5)*	214.3(1.4)*	223.0(1.0)†	224.5(1.0)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	88.9(1.8)	86.5(2.2)	83.9(2.7)	88.9(2.1)	86.6(1.6)	
	217.2(0.8)*	217.0(1.1)*	220.1(1.2)*	228.6(0.9)†	227.7(0.9)†	LQ
Non-Public	11.1(1.8)	13.5(2.2)	16.1(2.7)	11.1(2.1)	13.4(1.6)	
	230.5(1.7)*	231.8(2.1)*	230.0(2.5)*	238.1(2.3)†	241.5(1.7)†	LQ
QUARTILES						
Upper	25.0(0.8)	25.0(1.1)	25.0(1.0)	25.0(0.8)	24.9(0.9)	
	256.0(0.8)*	256.0(0.6)*	259.3(0.7)†*	265.6(0.8)†	265.6(0.8)†	LQ
Middle Two	50.0(0.6)	50.0(0.7)	50.0(0.9)	50.0(0.6)	50.0(0.7)	
	220.5(0.5)*	220.7(0.5)*	223.3(0.5)†*	231.3(0.4)†	231.5(0.5)†	LQ
Lower	25.0(0.8)	25.0(1.1)	25.0(1.2)	25.0(0.9)	25.0(0.9)	
	177.6(0.6)*	178.5(0.8)*	180.9(0.7)†*	190.3(1.0)†	189.9(0.8)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages and proficiency means

	1973	1978	1982	1986	1990	1992	TREND TESTS
TOTAL		100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	266.0(1.1)*	264.1(1.1)*	268.6(1.1)*	269.0(1.2)*	270.4(0.9)†	273.1(0.9)†	L
SEX							
Male		49.9(0.5)	50.2(0.4)	49.8(0.9)	49.8(0.6)	49.9(0.8)	
	265.0(1.3)*	263.6(1.3)*	269.2(1.4)*	270.0(1.1)†*	271.2(1.2)†	274.1(1.1)†	L
Female		50.1(0.5)	49.8(0.4)	50.2(0.9)	50.2(0.6)	50.1(0.8)	
	267.0(1.1)*	264.7(1.1)*	268.0(1.1)*	267.9(1.5)	269.6(0.9)	272.0(1.0)†	LQ
RACE/ETHNICITY							
White		80.2(1.7)*	79.2(2.1)	76.8(1.0)	73.4(0.7)†	74.2(0.5)†	
	274.0(0.9)*	271.6(0.8)*	274.4(1.0)*	273.6(1.3)*	276.3(1.1)	278.9(0.9)†	LQ
Black		13.1(1.5)	13.8(1.8)	14.4(0.9)	15.6(0.3)	15.9(0.3)	
	228.0(1.9)*	229.6(1.9)*	240.4(1.6)†*	249.2(2.3)†	249.1(2.3)†	250.2(1.9)†	L
Hispanic		5.8(0.9)	5.0(1.2)	6.6(1.1)	7.3(0.5)	7.0(0.5)	
	239.0(2.2)*	238.0(2.0)*	252.4(1.7)†*	254.3(2.9)†	254.6(1.8)†	259.3(1.8)†	L
Other		0.9(0.2)*	2.0(0.5)	2.2(0.3)†	3.7(0.8)†	2.9(0.3)†	
		272.5(3.5)	274.5(4.1)	282.7(3.4)	273.5(7.2)	282.0(2.3)	N
REGION							
Northeast		22.5(2.2)	23.8(2.5)	22.4(1.6)	24.3(1.0)*	20.9(0.8)	
	275.0(2.4)	272.7(2.4)	276.9(2.0)	276.6(2.2)	274.7(2.3)	273.6(2.2)	N
Southeast		22.6(2.0)	22.5(2.2)	24.7(5.8)	23.1(0.8)	23.9(1.6)	
	255.0(3.2)*	252.7(3.3)*	258.1(2.2)*	263.5(1.4)*	265.7(1.9)†	271.0(2.5)†	L
Central		31.3(1.8)	26.9(3.4)	24.9(5.0)	23.5(0.7)†	26.6(1.0)	
	271.0(1.8)	269.4(1.8)*	272.8(2.1)	266.1(4.5)	272.2(2.4)	275.4(1.5)	N
West		23.6(2.2)	26.9(2.3)	28.0(1.5)	29.1(0.9)	28.6(0.9)	L
	262.0(1.9)*	260.0(1.9)*	266.0(2.4)	270.4(2.1)†	269.1(1.6)†	272.3(1.4)†	

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978 (1973 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results for 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1973 and the Race/Ethnicity data are available only for White, Black, and Hispanic students for that assessment year.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	27.4(1.1)*	28.4(1.4)*	32.7(2.1)	36.1(1.3)†	37.4(1.1)†	
	239.6(1.4)*	247.2(1.4)†*	251.1(1.1)†*	252.7(1.0)†*	258.1(1.3)†	L
At Modal Grade	70.5(1.1)*	70.3(1.4)*	66.8(2.1)	63.4(1.4)†	62.4(1.0)†	
	273.8(1.1)*	276.6(0.9)*	277.6(1.0)†*	280.4(0.9)†	281.8(0.9)†	L
Above Modal Grade	0.7(0.2)	1.4(0.5)	0.5(0.1)	0.5(0.2)	0.2(0.1)	
	297.6(9.1)	303.9(6.3)	296.9(7.7)*	277.8(16.5)*	327.9(9.5)	N
TYPE OF COMMUNITY						
Extreme Rural	10.4(1.9)	9.1(1.5)	6.0(3.5)	9.8(2.4)	9.2(2.2)	
	254.5(3.4)*	258.2(1.9)*	270.1(6.9)	264.9(3.7)	272.4(2.7)†	L
Disadvantaged Urban	6.7(1.2)	7.0(1.5)	8.9(4.3)	11.0(2.0)	9.7(1.5)	
	233.3(4.2)*	246.2(4.4)	247.8(3.0)†	253.3(2.9)†	250.3(2.9)†	L
Advantaged Urban	9.1(1.9)	8.8(2.2)	11.5(3.5)	9.7(1.9)	10.2(2.3)	
	284.8(1.6)	291.2(1.5)†	285.6(0.9)	282.9(2.4)	291.6(2.5)	N
Other	73.8(2.9)	75.0(3.0)	73.7(6.3)	69.5(3.4)	70.8(3.0)	
	265.7(1.2)*	269.3(1.0)*	268.9(1.1)*	272.1(1.1)†	273.6(0.9)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	12.2(0.6)*	10.7(0.6)*	7.9(1.1)†	7.6(0.5)†	5.9(0.5)†	
	244.7(1.2)*	251.0(1.4)†*	252.3(2.3)†	253.4(1.8)†	255.5(1.0)†	L
Graduated H.S.	33.0(0.8)*	34.4(0.8)*	31.0(1.3)*	26.8(0.8)†*	23.1(0.9)†	
	263.1(1.0)	262.9(0.8)	262.7(1.2)	262.6(1.2)	263.2(1.2)	N
Some Educ After H.S.	14.3(0.4)*	14.1(0.4)*	15.6(0.6)*	16.8(0.6)†	18.4(0.7)†	
	273.1(1.2)*	275.1(0.9)	273.7(0.8)*	277.1(1.0)†	277.6(1.0)†	L
Graduated College	25.7(1.2)*	32.1(1.3)†*	37.5(2.0)†*	40.8(1.2)†	44.1(1.3)†	
	283.8(1.2)	282.3(1.5)	279.9(1.4)	280.4(1.0)	282.8(1.0)	N
Unknown	14.8(0.9)*	8.8(0.8)†	8.0(0.4)†	7.9(0.5)†	8.4(0.4)†	
	239.5(1.3)*	251.9(3.2)†	247.4(2.3)†	247.8(2.1)†	252.9(1.8)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	90.8(1.6)	89.4(1.3)	95.9(1.8)*	89.6(1.4)	88.1(1.9)	
	262.6(1.2)*	267.1(1.3)†*	268.7(1.2)†	269.3(1.0)†	271.7(1.0)†	L
Non-Public	9.2(1.6)	10.6(1.3)	4.1(1.8)*	10.4(1.4)	11.9(1.9)	
	279.2(1.4)	281.1(2.1)	275.7(4.9)	279.9(1.7)	283.3(2.5)	N
QUARTILES						
Upper	25.0(1.1)	25.0(1.1)	25.0(1.4)	25.0(1.1)	24.9(1.1)	
	305.0(0.6)*	305.6(0.7)*	305.7(0.7)*	306.5(0.6)	308.6(0.6)†	L
Middle Two	50.0(0.7)	50.0(0.7)	50.0(0.9)	50.1(0.9)	50.1(0.8)	
	265.5(0.4)*	269.3(0.3)†*	268.6(0.5)†*	270.7(0.4)†*	273.8(0.4)†	L
Lower	25.0(1.1)	25.0(1.3)	25.0(1.2)	24.9(1.0)	25.0(0.9)	
	220.6(0.7)*	230.3(0.8)†*	232.9(0.7)†	233.7(0.8)†	236.3(1.2)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages and proficiency means

	1973	1978	1982	1986	1990	1992	TREND TESTS
TOTAL		100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	304.0(1.1)	300.4(1.0)*	298.5(0.9)*†	302.0(0.9)*	304.6(0.9)	306.7(0.9)	LQ
SEX							
Male		48.7(0.5)	48.7(0.6)	49.0(1.2)	48.6(0.9)	50.7(1.2)	
	309.0(1.2)	303.8(1.0)*†	301.5(1.0)*†	304.7(1.2)*†	306.3(1.1)	308.9(1.1)	Q
Female		51.3(0.5)	51.3(0.6)	51.0(1.2)	51.4(0.9)	49.3(1.2)	
	301.0(1.1)	297.1(1.0)*	295.6(1.0)*†	299.4(1.0)*	302.9(1.1)	304.5(1.1)	LQ
RACE/ETHNICITY							
White		83.1(1.3)*	80.7(2.0)*	77.6(0.5)†*	73.3(0.5)†	74.7(0.5)†	
	310.0(1.1)	305.9(0.9)*†	303.7(0.9)*†	307.5(1.0)*	309.5(1.0)	311.9(0.8)	LQ
Black		11.8(1.1)*	12.5(1.7)	14.3(0.3)	15.6(0.3)†	14.8(0.3)†	
	270.0(1.3)*	268.4(1.3)*	271.8(1.2)*	278.6(2.1)†	288.5(2.8)†	285.8(2.2)†	LQ
Hispanic		4.0(0.5)*	4.9(1.0)	5.5(0.3)*	6.9(0.4)†	7.4(0.5)†	
	277.0(2.2)*	276.3(2.3)*	276.7(1.8)*	283.1(2.9)	283.5(2.9)	292.2(2.6)†	LQ
Other		1.1(0.1)*	1.9(0.6)	2.6(0.4)†	4.2(0.5)†	3.1(0.2)†	
		312.9(3.3)	309.4(4.5)	304.7(7.2)	312.5(5.2)	317.1(4.0)	N
REGION							
Northeast		23.0(2.0)	24.0(2.8)	23.7(0.8)	22.1(1.0)	21.6(0.9)	
	312.0(1.8)	306.7(1.8)	304.0(2.0)*†	307.4(1.9)	303.8(2.1)*†	311.4(2.0)	Q
Southeast		22.3(2.1)	20.5(2.1)	22.9(2.3)	24.3(0.9)	24.6(1.4)	
	296.0(1.8)	292.3(1.7)*	292.3(2.1)*	297.3(1.4)	301.0(2.3)	301.3(1.9)	LQ
Central		31.3(2.1)*	29.6(4.3)	27.7(2.2)	25.9(0.9)	25.0(1.0)†	
	306.0(1.8)	305.2(1.9)	302.0(1.4)*	303.6(1.9)*	311.2(2.1)	312.2(2.0)	LQ
West		23.4(2.5)	25.9(2.8)	25.7(0.9)	27.7(0.9)	28.9(0.9)	
	303.0(2.0)	295.5(1.8)*†	294.1(1.9)*†	299.3(2.7)	302.1(1.5)	303.1(2.3)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978 (1973 for the subgroups Total, Male, Female, White, Black, Northeast, Southeast, Central, and West), where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

Results for 1973, extrapolated from previous NAEP data, were rounded to the nearest integer. These extrapolated data are not available for the percentages of subgroup membership for 1973 and the Race/Ethnicity data are available only for White, Black, and Hispanic students for that assessment year.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
GRADE						
Below Modal Grade	14.8(0.6)*	15.6(1.0)*	16.8(0.9)*	21.7(1.0)†	23.9(1.1)†	
	272.7(1.1)*	274.1(1.6)*	277.3(1.6)*	281.8(1.7)†	284.5(1.4)†	L
At Modal Grade	75.3(0.7)*	74.9(1.0)*	75.3(1.2)*	70.2(1.0)†	70.1(1.0)†	
	304.7(1.0)*	302.5(0.9)*	306.7(0.9)*	310.9(0.8)†	313.3(0.8)†	LQ
Above Modal Grade	9.8(0.5)*	9.5(0.7)*	7.9(0.7)	8.1(0.6)*	6.1(0.5)†	
	309.3(1.0)*	306.5(1.4)*	309.1(3.0)	310.6(1.8)	317.7(2.4)†	LQ
TYPE OF COMMUNITY						
Extreme Rural	8.0(1.3)	7.8(1.5)	3.1(1.2)†*	11.5(1.7)	10.6(2.2)	
	295.2(1.5)*	293.3(2.0)*	304.7(5.2)	303.8(1.8)†	305.3(1.8)†	L
Disadvantaged Urban	6.7(1.2)	7.3(1.7)	6.3(1.1)	9.3(2.0)	11.6(1.8)	
	272.5(1.7)*	277.6(2.4)*	272.6(2.0)*	284.8(4.2)†	288.6(2.9)†	LQ
Advantaged Urban	10.4(2.1)	9.5(1.5)	12.7(2.5)	10.5(1.7)	10.3(1.8)	
	320.5(2.0)	318.1(2.7)	316.7(3.4)	317.1(4.4)	316.6(3.5)	N
Other	74.9(3.0)	75.4(2.9)	78.0(3.5)	68.6(3.1)	67.5(3.3)	
	300.6(1.1)*	298.5(1.0)*	301.8(1.1)*	305.5(1.1)†	308.6(1.1)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	13.3(0.6)*	13.8(0.9)*	8.3(0.4)†	7.9(0.6)†	8.1(0.6)†	
	279.6(1.2)	279.3(1.0)	279.3(2.3)	285.4(2.2)	285.5(2.3)	L
Graduated H.S.	33.3(0.7)*	32.7(0.8)*	27.9(1.1)†*	26.4(1.1)†*	21.4(0.9)†	
	293.9(0.8)	293.4(0.8)	293.1(1.0)	293.7(0.9)	297.6(1.7)	Q
Some Educ After H.S.	16.2(0.4)*	17.7(0.5)*	24.1(1.0)†	23.8(0.9)†	25.4(0.9)†	
	305.3(0.9)	303.9(0.9)*	305.2(1.2)	307.7(1.0)	307.5(1.1)	L
Graduated College	32.4(1.1)*	31.8(1.3)*	36.9(1.2)†*	38.9(1.4)†	42.6(1.4)†	
	316.8(1.0)	312.4(1.0)†	313.9(1.4)	316.2(1.3)	315.9(1.0)	Q
Unknown	4.8(0.4)*	4.0(0.3)*	2.8(0.3)†	3.0(0.4)†	2.5(0.3)†	
	275.7(1.9)*	271.7(1.8)*	280.6(2.4)	276.8(2.8)*	290.2(3.9)†	LQ

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages and proficiency means (continued)

	1978	1982	1986	1990	1992	TREND TESTS
TYPE OF SCHOOL						
Public	94.4(1.0)	91.6(1.6)	96.0(1.4)	92.8(1.8)	91.3(2.2)	
	299.6(1.0)*	297.3(0.9)*	301.2(1.0)*	303.5(0.8)†	305.3(0.9)†	LQ
Non-Public	5.6(1.0)	8.4(1.6)	4.0(1.4)	7.2(1.8)	8.7(2.2)	
	314.3(3.2)	311.4(1.7)*	320.1(9.8)	317.7(6.6)	320.4(3.0)	N
QUARTILES						
Upper	25.0(1.1)	25.0(1.0)	25.0(1.1)	25.6(1.2)	24.9(1.0)	
	338.5(0.4)*	336.1(0.6)†*	339.8(0.7)	341.1(0.8)†	342.0(0.7)†	LQ
Middle Two	50.0(0.7)	50.0(0.6)	50.0(1.1)	49.1(1.1)	50.1(0.9)	
	301.7(0.3)*	298.8(0.3)†*	301.4(0.5)*	304.7(0.5)†*	307.5(0.4)†	LQ
Lower	25.0(1.0)	25.0(1.2)	25.0(0.9)	25.4(1.0)	25.0(1.0)	
	259.6(0.5)*	260.2(0.7)*	265.2(0.9)†*	267.5(0.9)†	269.9(0.9)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at above 150

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	96.7(0.3)*	97.1(0.3)*	97.9(0.3)†*	99.1(0.2)†	99.0(0.2)†	L
SEX						
Male	96.2(0.5)*	96.5(0.5)*	98.0(0.5)†	99.0(0.3)†	99.0(0.3)†	L
Female	97.2(0.3)*	97.6(0.3)*	97.8(0.4)	99.1(0.3)†	99.0(0.3)†	L
RACE/ETHNICITY						
White	98.3(0.2)*	98.5(0.3)*	98.8(0.2)*	99.6(0.2)†	99.6(0.1)†	L
Black	88.4(1.0)*	90.2(1.0)*	93.9(1.4)†	96.9(0.9)†	96.6(1.1)†	L
Hispanic	93.0(1.2)	94.3(1.2)	96.4(1.3)	98.0(0.8)†	97.2(1.3)	L
Other	98.1(1.6)	99.2(0.5)	97.4(2.2)	99.2(0.8)	99.8(0.3)	N
GRADE						
Below Modal Grade	89.4(0.8)*	91.5(1.0)*	94.1(0.8)†*	97.5(0.6)†	97.3(0.6)†	L
At Modal Grade	99.3(0.2)*	99.5(0.1)*	99.8(0.1)†	99.9(0.1)†	99.9(0.1)†	L
Above Modal Grade	99.6(0.6)	99.8(0.7)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	97.9(0.4)*	98.3(0.4)*	98.4(0.5)	99.3(0.3)†	99.5(0.2)†	L
Southeast	94.0(0.6)*	94.6(0.8)*	97.1(0.7)†	98.2(0.7)†	98.1(0.7)†	L
Central	98.2(0.3)*	97.9(0.5)*	98.5(0.5)	99.4(0.3)†	99.4(0.3)†	L
West	96.2(0.6)*	97.5(0.6)	97.5(0.9)	99.3(0.3)†	98.8(0.5)†	L
TYPE OF COMMUNITY						
Extreme Rural	94.5(1.6)*	95.3(1.3)*	96.7(2.0)	99.3(0.5)†	99.0(0.6)†	L
Disadvantaged Urban	91.4(1.4)	91.8(1.5)	94.3(1.4)	97.4(1.5)†	95.2(1.5)	L
Advantaged Urban	99.5(0.4)	99.6(0.4)	99.6(0.3)	99.9(0.2)	99.9(0.1)	N
Other	97.0(0.3)*	97.5(0.4)*	97.8(0.4)*	99.1(0.2)†	99.3(0.2)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	92.2(1.1)*	90.9(1.6)*	93.9(1.8)	97.9(1.2)†	98.1(1.1)†	L
Graduated H.S.	97.1(0.4)	97.6(0.4)	97.4(0.5)	98.7(0.4)†	98.2(0.6)	L
Some Educ After H.S.	98.5(0.6)	98.2(0.6)	98.9(1.0)	99.1(0.6)	99.5(0.3)	N
Graduated College	98.8(0.3)	98.6(0.3)	99.0(0.3)	99.5(0.3)	99.3(0.3)	L
Unknown	95.6(0.5)*	96.3(0.5)*	97.4(0.6)	99.0(0.3)†	98.8(0.4)†	L
TYPE OF SCHOOL						
Public	96.4(0.3)*	96.8(0.4)*	97.7(0.3)†*	99.0(0.2)†	98.8(0.3)†	L
Non-Public	99.0(1.0)	99.0(0.4)	98.7(0.8)	99.7(0.3)	99.8(0.1)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.9(0.1)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
Lower	86.9(0.9)*	88.4(1.2)*	91.6(1.1)†*	96.3(0.8)†	95.9(0.9)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at above 200

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	70.4(0.9)*	71.4(1.2)*	74.1(1.2)*	81.5(1.0)†	81.4(0.8)†	LQ
SEX						
Male	68.9(1.0)*	68.8(1.3)*	74.0(1.4)†*	80.6(1.0)†	81.9(1.0)†	LQ
Female	72.0(1.1)*	74.0(1.3)*	74.3(1.3)*	82.3(1.3)†	80.9(1.1)†	L
RACE/ETHNICITY						
White	76.3(1.0)*	76.8(1.2)*	79.6(1.3)*	86.9(0.9)†	86.9(0.7)†	LQ
Black	42.0(1.4)*	46.1(2.4)*	53.4(2.5)†	60.0(2.8)†	59.8(2.8)†	L
Hispanic	54.2(2.8)*	55.7(2.3)*	57.6(2.9)	68.4(3.0)†	65.0(2.9)†	L
Other	80.3(3.6)	85.2(3.4)	70.4(8.0)	87.0(5.4)	87.8(3.1)	N
GRADE						
Below Modal Grade	39.6(1.6)*	41.7(2.3)*	48.0(1.9)†*	60.3(1.9)†	61.0(1.4)†	LQ
At Modal Grade	81.5(0.9)*	84.4(0.9)*	87.5(1.1)†*	92.8(0.9)†	93.6(0.5)†	L
Above Modal Grade	85.5(6.6)	93.4(3.4)	93.2(9.1)	89.0(10.9)	100.0(0.0)	N
REGION						
Northeast	78.7(2.3)	78.0(2.1)*	77.9(3.2)	85.9(2.2)	85.5(1.8)	L
Southeast	60.3(1.8)*	62.5(2.3)*	70.6(2.7)†	75.1(2.8)†	72.9(2.0)†	L
Central	75.9(1.7)*	73.8(2.7)*	77.6(2.5)*	83.7(1.3)†	85.3(1.4)†	L
West	65.6(1.7)*	71.9(2.2)*	70.5(2.9)*	81.4(1.8)†	81.6(2.1)†	L
TYPE OF COMMUNITY						
Extreme Rural	63.4(3.7)*	63.7(3.0)*	73.3(7.4)	82.5(3.4)†	76.7(3.4)†	L
Disadvantaged Urban	49.0(3.4)*	49.7(2.5)*	55.6(2.9)	67.4(6.3)†	60.3(2.8)†	L
Advantaged Urban	87.7(1.6)*	89.1(2.0)	89.2(2.0)	92.6(1.0)†	93.2(1.3)†	L
Other	70.6(0.9)*	72.2(1.1)*	72.2(1.6)*	81.2(1.1)†	82.6(0.8)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	51.8(2.7)*	51.0(2.6)*	50.1(3.9)*	63.4(4.7)	71.0(4.1)†	LQ
Graduated H.S.	71.7(1.4)	72.1(1.4)	72.2(2.1)	79.3(1.6)†	75.5(1.9)	L
Some Educ After H.S.	80.7(2.0)	77.9(2.5)*	80.7(2.7)	85.7(2.3)	87.2(2.0)	L
Graduated College	82.1(1.3)*	80.3(1.5)*	82.6(1.2)	87.2(1.3)†	86.5(1.0)†	L
Unknown	63.6(1.3)*	64.9(2.2)*	67.7(1.6)*	77.1(1.4)†	77.7(1.4)†	LQ
TYPE OF SCHOOL						
Public	68.8(0.9)*	69.4(1.2)*	72.7(1.4)*	80.5(1.1)†	79.7(0.9)†	L
Non-Public	83.3(1.9)*	84.3(2.1)*	81.8(2.3)*	89.3(1.8)	92.2(1.2)†	LQ
QUARTILES						
Upper	99.6(0.1)	99.7(0.2)	99.9(0.2)	100.0(0.0)†	99.9(0.1)	L
Middle Two	82.2(0.6)*	84.3(0.7)*	89.5(0.9)†*	95.8(0.5)†	95.7(0.4)†	L
Lower	17.7(0.9)*	17.5(1.6)*	17.6(1.5)*	34.3(2.2)†	34.1(1.4)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at above 250

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	19.6(0.7)*	18.8(1.0)*	20.7(0.9)*	27.7(0.9)†	27.8(0.9)†	LQ
SEX						
Male	19.2(0.6)*	18.1(1.1)*	20.9(1.1)*	27.5(1.0)†	29.4(1.2)†	LQ
Female	19.9(1.0)*	19.6(1.1)*	20.6(1.3)*	27.9(1.3)†	26.3(1.5)†	LQ
RACE/ETHNICITY						
White	22.9(0.9)*	21.8(1.1)*	24.6(1.0)*	32.7(1.0)†	32.4(1.0)†	LQ
Black	4.1(0.6)*	4.4(0.8)*	5.6(0.9)	9.4(1.7)†	9.6(1.4)†	L
Hispanic	9.2(2.5)	7.8(1.7)	7.3(2.8)	11.3(3.5)	11.7(2.5)	N
Other	25.1(3.6)	38.3(4.7)	25.1(6.4)	31.7(3.6)	38.7(5.2)	N
GRADE						
Below Modal Grade	2.9(0.6)*	3.2(0.4)*	4.2(0.5)*	6.9(0.6)†	7.6(0.9)†	L
At Modal Grade	25.4(0.9)*	25.4(1.1)*	29.1(1.1)†*	38.9(1.3)†	39.9(1.1)†	LQ
Above Modal Grade	42.2(7.5)	62.4(16.3)	48.2(14.5)	35.8(13.9)	67.1(17.2)	N
REGION						
Northeast	25.9(1.6)	23.8(1.4)*	24.8(2.7)	34.4(2.1)†	32.4(2.1)	LQ
Southeast	13.4(0.8)*	13.6(1.7)*	17.2(2.4)	24.0(2.0)†	20.3(1.6)†	L
Central	23.2(1.4)*	19.9(2.5)*	24.7(1.8)*	27.5(1.8)	31.4(1.9)†	LQ
West	14.9(1.1)*	18.6(1.4)*	16.3(2.2)*	25.6(1.6)†	27.1(2.5)†	L
TYPE OF COMMUNITY						
Extreme Rural	16.3(1.6)	13.0(3.3)	18.4(6.2)	28.6(3.5)†	22.5(2.0)	L
Disadvantaged Urban	7.2(1.6)	6.0(1.4)	8.3(2.5)	14.2(3.6)	10.7(1.9)	L
Advantaged Urban	35.6(2.5)*	36.6(2.7)*	36.8(3.2)*	42.4(3.0)	48.6(3.4)†	L
Other	16.7(0.7)*	18.4(0.8)*	18.2(1.3)*	26.9(1.0)†	27.3(1.1)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	7.5(1.2)*	7.1(1.5)*	6.4(2.3)*	9.9(2.6)	15.0(2.2)†	LQ
Graduated H.S.	18.8(1.1)	16.4(1.3)	17.4(2.1)	23.6(1.6)	20.5(2.1)	L
Some Educ After H.S.	29.2(1.9)	23.7(2.9)*	26.6(2.6)*	35.0(4.2)	36.9(2.4)	LQ
Graduated College	30.4(1.3)	27.2(1.3)*	29.6(1.4)*	36.6(1.7)†	34.8(1.4)	LQ
Unknown	13.4(1.1)*	13.6(1.3)*	13.3(1.1)*	19.7(1.1)†	21.7(1.3)†	LQ
TYPE OF SCHOOL						
Public	18.5(0.7)*	17.3(0.9)*	19.1(1.1)*	26.8(1.0)†	26.1(0.9)†	LQ
Non-Public	28.4(2.0)*	28.6(2.6)*	28.9(2.7)*	35.2(3.3)	38.6(2.7)†	L
QUARTILES						
Upper	59.7(1.4)*	60.0(1.6)*	67.9(1.4)†*	79.8(1.3)†	79.9(1.3)†	LQ
Middle Two	9.3(0.6)*	7.7(0.7)*	7.5(0.7)*	15.5(0.8)†	15.6(1.0)†	LQ
Lower	0.1(0.1)	0.0(0.1)	0.0(0.0)	0.1(0.2)	0.1(0.1)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at above 300

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	0.8(0.1)	0.6(0.1)	0.6(0.2)	1.2(0.3)	1.2(0.3)	L
SEX						
Male	0.7(0.2)	0.6(0.1)	0.7(0.3)	1.3(0.4)	1.4(0.3)	L
Female	0.8(0.2)	0.5(0.1)	0.6(0.3)	1.0(0.3)	1.0(0.4)	N
RACE/ETHNICITY						
White	0.9(0.2)	0.6(0.1)	0.8(0.3)	1.5(0.4)	1.4(0.3)	L
Black	0.0(0.1)	0.0(0.1)	0.1(0.1)	0.1(0.1)	0.1(0.1)	N
Hispanic	0.2(0.5)	0.0(0.0)	0.1(0.2)	0.2(0.2)	0.1(0.5)	N
Other	1.9(0.9)	3.7(2.1)	0.8(0.8)	2.0(1.0)	4.0(1.7)	N
GRADE						
Below Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	N
At Modal Grade	1.0(0.2)	0.7(0.1)	0.9(0.3)	1.8(0.4)	1.9(0.4)	L
Above Modal Grade	4.9(4.4)	9.4(6.5)	6.1(5.4)	1.0(2.5)	7.2(7.6)	N
REGION						
Northeast	1.3(0.5)	0.9(0.3)	1.0(0.4)	2.1(0.7)	1.7(0.7)	N
Southeast	0.3(0.2)	0.3(0.1)	0.3(0.2)	1.2(0.6)	0.7(0.2)	L
Central	1.1(0.3)	0.6(0.3)	1.0(0.7)	0.6(0.2)	1.4(0.6)	N
West	0.4(0.2)	0.6(0.1)	0.2(0.2)	0.9(0.4)	1.0(0.5)	N
TYPE OF COMMUNITY						
Extreme Rural	0.6(0.6)	0.3(0.2)	0.3(0.6)	0.9(0.6)	1.0(0.6)	N
Disadvantaged Urban	0.1(0.2)	0.1(0.1)	0.0(0.0)	0.1(0.2)	0.3(0.3)	N
Advantaged Urban	2.1(0.7)	2.0(0.4)	1.9(1.2)	3.0(1.2)	3.9(1.4)	N
Other	0.7(0.1)	0.5(0.1)	0.4(0.1)	1.0(0.3)	0.9(0.3)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.1(0.2)	0.0(0.1)	0.0(0.0)	0.0(0.0)	0.1(0.1)	N
Graduated H.S.	0.6(0.2)	0.4(0.2)	0.4(0.4)	0.4(0.4)	0.4(0.5)	N
Some Educ After H.S.	1.6(0.6)	0.5(0.5)	1.2(0.9)	1.4(0.8)	2.0(0.8)	N
Graduated College	1.6(0.5)	1.0(0.3)	1.2(0.5)	2.1(0.5)	1.8(0.5)	N
Unknown	0.3(0.1)	0.4(0.2)	0.2(0.1)	0.5(0.3)	0.7(0.2)	N
TYPE OF SCHOOL						
Public	0.7(0.2)	0.5(0.1)	0.6(0.2)	1.1(0.3)	1.1(0.3)	N
Non-Public	1.2(0.4)	1.0(0.6)	1.1(0.6)	1.8(1.2)	1.9(0.7)	N
QUARTILES						
Upper	3.0(0.5)	2.2(0.3)	2.6(0.8)	4.6(1.1)	4.7(1.0)	L
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.1(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at above 350

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
SEX						
Male	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Female	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
RACE/ETHNICITY						
White	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Hispanic	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.1(0.2)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
GRADE						
Below Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
At Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Above Modal Grade	0.0(0.0)	0.5(0.8)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
REGION						
Northeast	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	N
Southeast	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Central	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
West	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
TYPE OF COMMUNITY						
Extreme Rural	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Disadvantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Advantaged Urban	0.0(0.0)	0.0(0.1)	0.0(0.1)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Some Educ After H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated College	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Unknown	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
TYPE OF SCHOOL						
Public	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Non-Public	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	0.0(0.0)	N
QUARTILES						
Upper	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	N
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 150

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	99.8(0.1)*	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	LQ
SEX						
Male	99.7(0.1)*	100.0(0.1)	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	LQ
Female	99.8(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	LQ
RACE/ETHNICITY						
White	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Black	98.6(0.4)*	99.8(0.2)†	100.0(0.0)†	100.0(0.0)†	99.9(0.1)†	LQ
Hispanic	99.6(0.3)	99.9(0.1)	100.0(0.3)	99.9(0.2)	100.0(0.0)	N
Other	99.8(0.4)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
GRADE						
Below Modal Grade	99.2(0.2)*	99.9(0.1)†	100.0(0.1)†	100.0(0.0)†	100.0(0.0)†	LQ
At Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Above Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	L
Southeast	99.4(0.2)	99.9(0.1)	100.0(0.0)†	100.0(0.0)†	100.0(0.0)	LQ
Central	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
West	99.8(0.1)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
TYPE OF COMMUNITY						
Extreme Rural	99.6(0.2)	100.0(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.1)	N
Disadvantaged Urban	98.6(0.5)*	99.9(0.2)	99.9(0.2)	99.9(0.1)	100.0(0.0)†	LQ
Advantaged Urban	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	99.9(0.1)*	100.0(0.0)	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	99.5(0.2)	99.9(0.2)	100.0(0.0)	100.0(0.1)	100.0(0.0)	L
Graduated H.S.	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Some Educ After H.S.	99.9(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.1)	N
Graduated College	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Unknown	99.1(0.3)*	99.9(0.1)†	100.0(0.2)†	100.0(0.1)†	100.0(0.0)†	LQ
TYPE OF SCHOOL						
Public	99.7(0.1)*	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	LQ
Non-Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	99.0(0.3)*	99.9(0.1)†	100.0(0.1)†	100.0(0.1)†	100.0(0.0)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 200

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	94.6(0.5)*	97.7(0.4)†	98.6(0.2)†	98.5(0.2)†	98.7(0.3)†	LQ
SEX						
Male	93.9(0.5)*	97.5(0.6)†	98.5(0.3)†	98.2(0.3)†	98.8(0.4)†	LQ
Female	95.2(0.5)*	98.0(0.3)†	98.6(0.3)†	98.9(0.2)†	98.6(0.2)†	LQ
RACE/ETHNICITY						
White	97.6(0.3)*	99.1(0.1)†	99.3(0.3)†	99.4(0.1)†	99.6(0.2)†	LQ
Black	79.7(1.5)*	90.2(1.6)†	95.4(0.9)†	95.4(1.1)†	95.0(1.4)†	LQ
Hispanic	86.4(0.9)*	95.9(0.9)†	96.9(1.4)†	96.8(1.1)†	98.1(0.7)†	LQ
Other	97.3(1.5)	99.1(0.6)	99.6(0.4)	98.3(1.0)	99.0(0.8)	N
GRADE						
Below Modal Grade	86.2(1.1)*	93.6(1.0)†*	96.4(0.6)†	96.3(0.5)†	97.1(0.6)†	LQ
At Modal Grade	97.9(0.3)*	99.4(0.2)†	99.6(0.1)†	99.8(0.1)†	99.7(0.1)†	LQ
Above Modal Grade	99.2(0.9)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	96.5(0.9)	99.0(0.3)†	99.2(0.2)†	99.1(0.6)	98.6(0.7)	LQ
Southeast	90.1(1.6)*	95.6(1.0)†	98.3(0.6)†	97.8(0.6)†	98.0(0.7)†	LQ
Central	96.8(0.4)*	98.6(0.5)†	98.4(1.0)	99.0(0.3)†	99.3(0.4)†	L
West	94.0(0.9)*	97.6(0.9)†	98.3(0.5)†	98.3(0.5)†	98.8(0.4)†	LQ
TYPE OF COMMUNITY						
Extreme Rural	92.0(1.4)*	96.8(0.9)†	99.4(0.9)†	97.8(1.2)†	99.1(0.6)†	LQ
Disadvantaged Urban	80.0(2.7)*	91.0(2.9)†	94.6(1.3)†	95.7(1.3)†	94.7(1.9)†	LQ
Advantaged Urban	98.6(0.4)*	99.8(0.1)†	99.2(0.5)	99.4(0.6)	99.8(0.2)†	N
Other	95.7(0.4)*	98.2(0.3)†	98.9(0.2)†	99.0(0.2)†	99.1(0.3)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	89.2(1.1)*	95.3(1.2)†	96.5(1.6)†	96.4(1.3)†	98.0(0.9)†	LQ
Graduated H.S.	96.0(0.4)*	98.0(0.4)†	98.8(0.5)†	98.5(0.5)†	98.3(0.7)†	LQ
Some Educ After H.S.	97.6(0.6)*	98.6(0.3)*	99.3(0.4)†	99.7(0.3)†	99.6(0.2)†	L
Graduated College	98.8(0.2)	98.9(0.4)	99.2(0.3)	99.3(0.2)	99.3(0.2)	L
Unknown	85.5(1.3)*	94.1(1.6)†	95.2(1.7)†	94.2(1.6)†	95.4(1.4)†	LQ
TYPE OF SCHOOL						
Public	94.1(0.5)*	97.5(0.4)†	98.5(0.3)†	98.4(0.2)†	98.5(0.3)†	LQ
Non-Public	99.0(0.4)	99.5(0.3)	98.9(0.6)	99.7(0.3)	99.9(0.1)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.6(0.1)*	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	100.0(0.0)†	LQ
Lower	79.0(1.2)*	91.0(1.2)†*	94.2(0.8)†	94.1(0.8)†	94.9(1.0)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 250

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	64.9(1.2)*	71.4(1.2)†*	73.3(1.6)†	74.7(1.0)†	77.9(1.1)†	L
SEX						
Male	63.9(1.3)*	71.3(1.4)†*	73.8(1.8)†	75.1(1.8)†	78.1(1.6)†	L
Female	65.9(1.2)*	71.4(1.3)†*	72.7(1.9)†	74.4(1.3)†	77.7(1.1)†	L
RACE/ETHNICITY						
White	72.9(0.9)*	78.3(0.9)†*	78.9(1.7)†*	82.0(1.0)†	84.9(1.1)†	L
Black	28.7(2.1)*	37.9(2.5)†*	49.0(3.7)†	48.7(3.6)†	51.0(2.7)†	L
Hispanic	36.0(2.9)*	52.2(2.5)†*	56.0(5.0)†	56.7(3.3)†	63.3(2.7)†	L
Other	68.6(4.3)*	75.3(5.9)	85.7(4.7)†	76.5(5.0)	82.9(3.2)†	L
GRADE						
Below Modal Grade	39.2(1.6)*	46.0(2.0)†*	51.3(2.1)†*	54.2(1.7)†*	61.6(2.1)†	L
At Modal Grade	75.2(1.1)*	81.2(1.0)†*	83.9(1.3)†	86.5(0.9)†	87.6(0.8)†	L
Above Modal Grade	88.7(5.1)	92.3(4.7)	96.8(4.6)	69.3(14.1)	100.0(0.0)	N
REGION						
Northeast	73.4(2.4)	79.4(1.5)	80.5(2.2)	78.2(2.3)	78.4(2.5)	N
Southeast	53.5(3.6)*	60.3(2.0)*	68.6(2.3)†	70.1(2.4)†	74.8(2.7)†	L
Central	70.4(1.9)*	75.9(2.4)	70.7(6.3)	77.9(2.8)	80.6(1.8)†	L
West	60.5(2.4)*	69.0(3.0)	73.9(2.2)†	72.9(1.8)†	77.7(2.0)†	L
TYPE OF COMMUNITY						
Extreme Rural	55.9(3.7)*	60.5(2.6)*	74.8(11.3)	69.1(5.3)	78.7(2.4)†	L
Disadvantaged Urban	32.1(4.3)*	43.7(5.4)	47.0(5.1)	53.9(3.7)†	48.8(4.1)†	L
Advantaged Urban	83.6(1.6)*	91.8(0.9)†	89.5(1.6)†	87.4(2.3)	94.3(1.6)†	L
Other	66.9(1.2)*	72.9(1.1)†*	73.8(1.6)†*	77.1(1.3)†	79.4(1.2)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	44.6(1.7)*	51.2(2.3)*	54.7(3.9)	55.8(2.6)†	59.7(2.3)†	L
Graduated H.S.	64.9(1.2)	66.7(1.0)	68.7(1.5)	68.2(1.9)	67.9(2.4)	N
Some Educ After H.S.	75.5(1.5)*	80.5(1.3)†*	80.7(1.9)	84.6(1.5)†	85.8(1.3)†	L
Graduated College	83.4(1.1)	84.2(1.5)	83.5(1.6)	84.1(1.1)	87.0(1.0)	N
Unknown	39.3(1.5)*	52.7(3.9)†	45.2(4.4)	46.3(3.6)	54.7(3.0)†	L
TYPE OF SCHOOL						
Public	63.3(1.2)*	69.7(1.3)†*	72.9(1.7)†	73.3(1.2)†	76.3(1.2)†	L
Non-Public	80.8(1.7)*	85.1(1.6)	81.9(3.3)	87.0(2.0)	89.7(2.1)†	L
QUARTILES						
Upper	98.8(0.3)*	99.8(0.1)†	100.0(0.1)†	99.9(0.1)†	100.0(0.0)†	LQ
Middle Two	74.0(0.6)*	83.9(0.8)†*	88.2(1.1)†*	89.6(0.8)†*	93.1(0.9)†	LQ
Lower	12.9(0.6)*	17.8(0.9)†*	16.7(1.5)*	19.7(1.7)†	25.5(2.2)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 300

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	18.0(0.7)	17.4(0.9)	15.8(1.0)	17.3(1.0)	18.9(1.0)	Q
SEX						
Male	18.4(0.9)	18.9(1.2)	17.6(1.1)	19.0(1.2)	20.7(1.1)	N
Female	17.5(0.7)	15.9(1.0)	14.1(1.3)	15.7(1.0)	17.2(1.4)	Q
RACE/ETHNICITY						
White	21.4(0.7)	20.5(1.0)	18.6(1.2)	21.0(1.2)	22.8(1.3)	Q
Black	2.3(0.5)	2.9(1.0)	4.0(1.4)	3.9(1.6)	4.0(0.7)	N
Hispanic	4.0(1.0)	6.3(1.0)	5.5(1.1)	6.4(1.7)	7.0(1.2)	N
Other	27.4(4.8)	24.2(3.9)	28.1(6.2)	22.2(8.3)	30.1(4.7)	N
GRADE						
Below Modal Grade	4.5(0.5)*	4.3(0.7)	4.0(0.7)*	4.5(0.6)	7.3(1.0)†	LQ
At Modal Grade	23.2(0.9)	21.9(0.9)	21.4(1.1)	24.6(1.3)	25.6(1.4)	Q
Above Modal Grade	47.9(9.2)*	60.6(7.2)*	45.5(7.9)*	25.9(24.9)*	92.1(7.5)†	Q
REGION						
Northeast	24.2(1.9)	23.9(2.1)	22.5(2.4)	21.3(2.4)	19.7(2.4)	N
Southeast	11.6(1.5)	10.2(1.3)*	10.0(1.3)*	13.7(1.4)	18.2(2.7)	LQ
Central	20.4(1.3)	20.1(1.8)	12.8(2.6)†*	17.4(2.4)	20.6(1.7)	Q
West	14.8(1.2)	15.1(1.8)	18.3(2.3)	16.9(1.8)	17.3(1.4)	N
TYPE OF COMMUNITY						
Extreme Rural	11.3(1.8)	8.8(0.8)	16.8(4.4)	12.5(2.3)	16.8(3.2)	N
Disadvantaged Urban	5.2(1.8)	7.3(3.1)	4.3(1.4)	7.9(2.1)	6.4(1.9)	N
Advantaged Urban	34.2(1.7)	38.3(1.9)	31.7(2.6)	28.2(3.5)	36.9(3.8)	N
Other	18.0(0.9)	17.0(0.9)	14.7(1.0)†*	18.0(1.3)	18.3(1.0)	Q
PARENTS' EDUCATION LEVEL						
Less Than H.S.	5.8(0.6)	5.6(0.7)	4.5(1.3)	4.7(1.4)	4.4(1.6)	N
Graduated H.S.	14.8(0.7)*	10.8(0.7)†	8.0(0.9)†	8.7(0.9)†	9.6(1.2)†	LQ
Some Educ After H.S.	22.2(1.3)	20.4(1.2)	16.9(2.2)	19.8(1.8)	19.3(1.6)	N
Graduated College	32.6(1.5)	30.0(1.6)	26.0(1.4)†	26.9(1.5)†	28.2(1.5)	LQ
Unknown	5.4(0.9)	7.2(1.9)	4.3(1.9)	4.2(1.3)	6.1(1.6)	N
TYPE OF SCHOOL						
Public	17.0(0.8)	16.4(1.0)	15.6(1.0)	16.7(1.1)	18.0(1.0)	N
Non-Public	26.9(1.8)	26.3(3.1)	22.0(6.8)	23.2(2.5)	25.9(3.7)	N
QUARTILES						
Upper	56.9(0.9)*	59.1(1.5)*	59.6(1.9)*	63.2(1.6)†	67.4(1.6)†	L
Middle Two	7.4(0.4)*	5.3(0.4)†	1.9(0.6)†*	3.1(0.5)†	4.2(0.6)†	LQ
Lower	0.1(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 350

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	1.0(0.2)	0.5(0.1)	0.4(0.1)†	0.4(0.1)†	0.4(0.2)	L
SEX						
Male	1.1(0.2)	0.7(0.2)	0.5(0.2)	0.5(0.2)	0.5(0.2)	L
Female	0.9(0.2)	0.4(0.2)	0.3(0.1)†	0.2(0.1)†	0.3(0.3)	L
RACE/ETHNICITY						
White	1.2(0.2)*	0.6(0.1)	0.4(0.1)†	0.4(0.2)†	0.4(0.2)†	L
Black	0.0(0.1)	0.0(0.0)	0.1(0.1)	0.1(0.3)	0.1(0.3)	N
Hispanic	0.1(0.1)	0.0(0.1)	0.2(0.4)	0.1(0.1)	0.0(0.1)	N
Other	3.7(2.1)	1.0(0.5)	1.4(1.1)	0.5(0.7)	1.2(1.3)	N
GRADE						
Below Modal Grade	0.1(0.1)	0.0(0.1)	0.0(0.0)	0.0(0.0)	0.1(0.1)	N
At Modal Grade	1.3(0.2)*	0.6(0.1)†	0.5(0.2)†	0.5(0.2)†	0.5(0.1)†	LQ
Above Modal Grade	9.0(4.6)	7.7(4.2)	4.6(6.5)	4.9(6.5)	14.8(31.5)	N
REGION						
Northeast	1.3(0.5)	1.0(0.4)	0.7(0.3)	0.7(0.4)	0.4(0.3)	N
Southeast	0.5(0.2)	0.1(0.1)	0.2(0.2)	0.1(0.1)	0.5(0.5)	N
Central	1.2(0.3)*	0.6(0.2)	0.3(0.3)	0.3(0.2)†	0.3(0.2)†	L
West	0.8(0.3)	0.3(0.1)	0.4(0.3)	0.3(0.2)	0.3(0.1)	N
TYPE OF COMMUNITY						
Extreme Rural	0.4(0.2)	0.1(0.2)	0.0(0.0)	0.1(0.1)	0.2(0.3)	N
Disadvantaged Urban	0.2(0.1)	0.3(0.5)	0.2(0.4)	0.1(0.1)	0.1(0.2)	N
Advantaged Urban	2.9(0.8)	1.9(0.8)	1.0(0.5)	0.6(0.4)†	1.5(1.1)	N
Other	0.9(0.2)*	0.4(0.1)	0.3(0.1)	0.4(0.1)	0.3(0.1)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	0.1(0.1)	0.0(0.1)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated H.S.	0.5(0.1)	0.1(0.1)	0.1(0.1)	0.0(0.1)†	0.1(0.1)	L
Some Educ After H.S.	1.1(0.2)*	0.5(0.2)	0.5(0.4)	0.4(0.3)	0.2(0.2)†	L
Graduated College	2.6(0.6)*	1.2(0.4)	0.7(0.3)†	0.7(0.3)†	0.7(0.4)†	L
Unknown	0.1(0.1)	0.0(0.1)	0.0(0.0)	0.1(0.1)	0.0(0.2)	N
TYPE OF SCHOOL						
Public	0.9(0.2)	0.5(0.1)	0.4(0.1)†	0.3(0.1)†	0.3(0.2)	L
Non-Public	1.4(0.4)	1.0(0.3)	0.1(0.2)†	0.7(0.4)	0.7(0.4)	Q
QUARTILES						
Upper	3.9(0.6)*	2.1(0.4)	1.5(0.5)†	1.4(0.5)†	1.5(0.6)†	L
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 150

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
SEX						
Male	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Female	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
RACE/ETHNICITY						
White	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Black	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Hispanic	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
GRADE						
Below Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
At Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Above Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Southeast	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Central	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
West	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
TYPE OF COMMUNITY						
Extreme Rural	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Disadvantaged Urban	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Advantaged Urban	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
PARENTS' EDUCATION LEVEL						
Less Than H.S.	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Graduated H.S.	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Some Educ After H.S.	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Graduated College	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Unknown	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
TYPE OF SCHOOL						
Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Non-Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 200

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	99.8(0.1)	99.9(0.0)	99.9(0.1)	100.0(0.1)	100.0(0.0)	L
SEX						
Male	99.9(0.1)	100.0(0.1)	99.9(0.1)	99.9(0.1)	100.0(0.0)	N
Female	99.7(0.1)*	99.9(0.0)	100.0(0.1)	100.0(0.1)	100.0(0.0)†	L
RACE/ETHNICITY						
White	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
Black	98.8(0.3)*	99.7(0.2)	100.0(0.2)†	99.9(0.2)†	100.0(0.1)†	LQ
Hispanic	99.3(0.4)	99.8(0.3)	99.4(1.2)	99.6(0.7)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
GRADE						
Below Modal Grade	99.1(0.3)*	99.7(0.2)	99.8(0.5)	99.9(0.2)	100.0(0.5)†	L
At Modal Grade	99.9(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Above Modal Grade	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION						
Northeast	99.9(0.1)	99.9(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Southeast	99.6(0.2)	99.9(0.1)	100.0(0.0)	100.0(0.1)	100.0(0.0)	L
Central	99.9(0.1)	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	N
West	99.8(0.1)	99.9(0.1)	99.8(0.3)	99.9(0.2)	100.0(0.0)	N
TYPE OF COMMUNITY						
Extreme Rural	99.8(0.2)	99.9(0.2)	100.0(0.0)	99.9(0.2)	100.0(0.0)	N
Disadvantaged Urban	98.8(0.5)	99.7(0.2)	99.9(0.2)	99.9(0.3)	100.0(0.1)	L
Advantaged Urban	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	99.9(0.0)*	100.0(0.0)	99.9(0.1)	100.0(0.0)	100.0(0.0)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	99.5(0.3)	99.8(0.1)	100.0(0.0)	99.9(0.3)	100.0(0.1)	N
Graduated H.S.	99.8(0.1)	99.9(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	N
Some Educ After H.S.	99.9(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Graduated College	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Unknown	99.1(0.4)	99.5(0.5)	100.0(0.1)	99.3(1.1)	100.0(0.0)	N
TYPE OF SCHOOL						
Public	99.8(0.1)	99.9(0.0)	99.9(0.1)	100.0(0.1)	100.0(0.0)†	L
Non-Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	99.3(0.2)*	99.7(0.1)	99.8(0.3)	99.8(0.2)	100.0(0.0)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 250

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	92.0(0.5)*	93.0(0.5)*	95.6(0.5)†	96.0(0.5)†	96.6(0.5)†	L
SEX						
Male	93.0(0.5)*	93.9(0.6)*	96.1(0.6)†	95.8(0.8)†	96.9(0.6)†	L
Female	91.0(0.6)*	92.1(0.6)*	95.1(0.7)†	96.2(0.8)†	96.3(0.8)†	L
RACE/ETHNICITY						
White	95.6(0.3)*	96.2(0.3)*	98.0(0.4)†	97.6(0.3)†	98.3(0.4)†	L
Black	70.7(1.7)*	76.4(1.5)*	85.6(2.5)†	92.4(2.2)†	89.6(2.5)†	L
Hispanic	78.3(2.3)*	81.4(1.9)*	89.3(2.5)†	85.8(4.2)	94.1(2.2)†	L
Other	94.5(2.6)	97.2(1.7)	91.9(2.7)	97.9(1.9)	96.5(1.7)	N
GRADE						
Below Modal Grade	75.5(1.3)*	79.0(1.9)*	84.2(2.3)†	88.2(1.8)†	90.0(1.7)†	L
At Modal Grade	94.8(0.5)*	95.5(0.4)*	98.0(0.4)†	98.1(0.4)†	98.7(0.3)†	L
Above Modal Grade	95.7(0.6)*	96.4(0.8)*	97.6(1.2)	98.5(0.9)†	99.0(0.7)†	L
REGION						
Northeast	93.8(0.6)*	95.2(0.9)	96.6(0.9)†	94.5(1.7)	97.3(0.7)†	L
Southeast	87.6(1.3)*	89.2(1.7)*	94.1(1.0)†	96.2(0.7)†	95.6(1.7)†	L
Central	94.9(0.8)*	94.8(0.5)*	96.8(0.9)	97.8(0.6)†	97.9(0.7)†	L
West	90.5(1.1)*	91.8(1.0)*	94.8(1.1)†	95.5(1.0)†	95.8(1.2)†	L
TYPE OF COMMUNITY						
Extreme Rural	91.4(1.0)*	92.1(1.2)*	97.0(2.6)	96.7(1.3)†	97.2(1.5)†	L
Disadvantaged Urban	74.2(2.0)*	80.7(1.7)*	80.7(3.3)*	89.0(4.3)†	91.5(2.5)†	L
Advantaged Urban	98.2(0.5)	98.6(0.6)	99.1(0.6)	98.6(0.7)	97.5(0.9)	N
Other	92.8(0.5)*	93.5(0.5)*	96.2(0.5)†	96.5(0.5)†	97.3(0.7)†	L
PARENTS' EDUCATION LEVEL						
Less Than H.S.	82.1(1.1)	84.0(1.4)	88.0(2.1)	90.5(2.5)†	89.9(3.7)	L
Graduated H.S.	90.7(0.6)*	92.7(0.6)	93.9(1.2)	93.8(1.2)	94.8(0.9)†	L
Some Educ After H.S.	95.5(0.5)*	96.2(0.7)*	97.9(0.6)†	98.5(0.7)†	98.5(0.4)†	L
Graduated College	97.7(0.3)	97.8(0.4)	98.3(0.4)	98.6(0.5)	98.0(0.6)	N
Unknown	77.2(2.0)*	74.4(3.1)*	88.0(4.1)	80.1(4.1)	90.9(4.7)†	L
TYPE OF SCHOOL						
Public	91.7(0.5)*	92.5(0.6)*	95.5(0.5)†	95.8(0.6)†	96.3(0.6)†	L
Non-Public	97.1(0.6)*	98.1(0.5)	99.4(0.6)†	98.2(1.2)	99.5(0.5)†	L
QUARTILES						
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.4(0.2)*	99.7(0.1)	99.9(0.0)†	99.9(0.1)	100.0(0.1)†	L
Lower	69.1(1.0)*	72.5(1.3)*	82.5(1.8)†	84.5(2.0)†	86.5(1.8)†	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 300

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	51.5(1.1)*	48.5(1.3)*	51.7(1.4)*	56.1(1.4)†	59.1(1.3)†	LQ
SEX						
Male	55.1(1.2)*	51.9(1.5)*	54.6(1.8)	57.6(1.4)	60.5(1.8)†	LQ
Female	48.2(1.3)*	45.3(1.4)*	48.9(1.7)*	54.7(1.8)†	57.7(1.6)†	LQ
RACE/ETHNICITY						
White	57.6(1.1)*	54.7(1.4)*	59.1(1.7)*	63.2(1.6)†	66.4(1.4)†	LQ
Black	16.8(1.6)*	17.1(1.5)*	20.8(2.8)	32.8(4.5)†	29.8(3.9)†	L
Hispanic	23.4(2.7)*	21.6(2.2)*	26.5(4.5)	30.1(3.1)	39.2(4.9)†	L
Other	64.7(4.9)	62.0(6.8)	54.9(8.2)	61.6(7.0)	69.8(4.8)	N
GRADE						
Below Modal Grade	20.1(1.1)*	18.5(1.5)*	19.8(2.2)	24.4(2.1)	27.2(2.6)†	LQ
At Modal Grade	56.5(1.2)*	53.5(1.3)*	58.3(1.5)*	65.1(1.4)†	69.0(1.2)†	LQ
Above Modal Grade	61.4(1.6)	58.2(2.0)*	56.8(4.4)	63.3(3.7)	70.6(3.8)	LQ
REGION						
Northeast	59.2(2.1)	55.6(2.5)	58.9(2.9)	55.7(3.2)	64.8(2.8)	N
Southeast	42.4(1.9)*	41.7(2.6)*	45.5(2.0)	49.4(2.8)	51.6(2.8)†	L
Central	57.1(2.3)*	52.0(2.3)*	53.9(2.6)*	65.3(3.3)	68.5(3.0)†	LQ
West	45.3(2.3)	43.3(2.7)	48.3(4.1)	53.8(2.6)	53.1(3.3)	L
TYPE OF COMMUNITY						
Extreme Rural	44.8(2.3)*	40.8(3.0)*	53.9(5.7)	55.4(2.8)†	58.7(3.3)†	L
Disadvantaged Urban	21.2(2.3)*	23.7(2.9)	12.5(2.8)*	28.1(5.8)	33.7(3.9)†	LQ
Advantaged Urban	75.1(2.1)	73.1(3.5)	71.4(4.0)	69.3(5.2)	71.9(4.7)	N
Other	51.7(1.4)*	48.6(1.4)*	51.6(1.8)*	58.0(1.7)†	61.6(1.7)†	LQ
PARENTS' EDUCATION LEVEL						
Less Than H.S.	26.1(1.4)	23.6(1.6)	21.1(2.9)	29.7(3.4)	30.9(4.2)	Q
Graduated H.S.	43.2(1.2)	41.0(1.2)	39.8(1.7)	41.6(1.7)	47.2(2.7)	Q
Some Educ After H.S.	57.5(1.4)	55.8(1.4)	55.4(2.5)	61.0(2.0)	60.1(2.8)	N
Graduated College	71.7(1.4)	66.8(1.5)	68.2(2.1)	71.1(1.9)	71.2(1.7)	Q
Unknown	23.9(2.2)	17.9(2.0)*	18.3(4.3)	23.3(5.2)	35.3(6.2)	Q
TYPE OF SCHOOL						
Public	50.6(1.2)*	46.9(1.3)*	50.7(1.6)*	55.0(1.3)	56.9(1.2)†	LQ
Non-Public	67.7(3.3)	66.3(2.4)*	75.1(10.6)	71.0(7.9)	79.5(3.7)	L
QUARTILES						
Upper	97.6(0.4)*	98.5(0.4)*	99.6(0.3)†	99.5(0.2)†	99.7(0.2)†	L
Middle Two	53.1(0.6)*	47.3(1.1)†*	53.1(1.8)*	61.5(1.6)†*	67.1(1.4)†	LQ
Lower	2.4(0.3)	1.0(0.3)†	1.2(0.6)	2.0(0.7)	2.5(0.7)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted proficiency results across assessments

Weighted percentages of students with proficiency at or above 350

	1978	1982	1986	1990	1992	TREND TESTS
TOTAL	7.3(0.4)	5.5(0.4)†	6.5(0.5)	7.2(0.6)	7.2(0.6)	Q
SEX						
Male	9.5(0.6)	6.9(0.7)†	8.4(0.9)	8.8(0.8)	9.1(0.7)	Q
Female	5.2(0.7)	4.1(0.4)	4.7(0.6)	5.6(0.8)	5.2(0.8)	N
RACE/ETHNICITY						
White	8.5(0.5)	6.4(0.5)†	7.9(0.7)	8.3(0.7)	8.7(0.9)	N
Black	0.5(0.2)	0.5(0.3)	0.2(0.3)	2.0(1.0)	0.9(0.7)	N
Hispanic	1.4(0.6)	0.7(0.4)	1.1(0.8)	1.9(0.8)	1.2(0.8)	N
Other	15.4(3.2)	9.5(2.7)	10.8(6.4)	15.9(4.3)	16.9(5.7)	N
GRADE						
Below Modal Grade	0.7(0.3)	0.7(0.3)	0.4(0.3)	1.2(0.5)	0.6(0.4)	N
At Modal Grade	8.1(0.5)	6.1(0.5)†*	7.2(0.6)	8.9(0.7)	8.9(0.8)	LQ
Above Modal Grade	11.4(0.9)	8.6(1.4)	13.5(2.4)	8.4(1.8)	14.0(2.9)	N
REGION						
Northeast	10.3(1.0)	7.3(1.3)	8.9(1.9)	7.3(1.0)	10.3(1.7)	N
Southeast	5.1(0.5)	4.0(0.7)	4.9(1.1)	6.8(1.8)	4.9(0.9)	N
Central	8.4(1.0)	6.9(0.8)	6.6(1.1)	9.3(1.1)	7.9(1.2)	N
West	5.0(0.6)	3.3(0.4)	5.6(1.4)	5.5(1.0)	6.3(1.2)	N
TYPE OF COMMUNITY						
Extreme Rural	4.4(0.4)	3.7(0.6)	6.5(5.9)	6.5(1.5)	5.0(1.1)	N
Disadvantaged Urban	0.8(0.3)	1.5(0.6)	0.2(0.3)	2.3(1.6)	1.2(0.6)	N
Advantaged Urban	17.2(1.8)	14.0(2.0)	11.8(3.1)	15.0(3.9)	13.6(2.3)	N
Other	6.8(0.5)	5.0(0.5)†*	6.2(0.6)	6.8(0.7)	7.6(0.8)	Q
PARENTS' EDUCATION LEVEL						
Less Than H.S.	1.4(0.3)	1.0(0.4)	0.5(0.5)	1.2(0.8)	0.8(0.8)	N
Graduated H.S.	3.9(0.3)	3.1(0.4)	2.7(0.6)	2.4(0.6)	2.9(1.2)	N
Some Educ After H.S.	7.4(0.7)	5.9(0.6)	6.9(0.9)	6.7(1.0)	5.8(0.8)	N
Graduated College	14.1(0.9)	10.2(1.1)†	11.0(1.1)	12.5(1.2)	11.7(1.2)	Q
Unknown	1.4(0.6)	0.8(0.4)	1.0(1.7)	0.4(0.4)	2.0(2.5)	N
TYPE OF SCHOOL						
Public	7.0(0.4)	5.2(0.4)†	6.1(0.5)	6.5(0.5)	6.7(0.7)	Q
Non-Public	12.9(2.7)	8.2(1.4)	16.3(9.1)	15.7(5.3)	12.2(2.7)	N
QUARTILES						
Upper	27.2(1.0)	21.5(1.3)†	25.9(1.6)	27.7(1.7)	28.3(2.4)	Q
Middle Two	1.0(0.2)	0.2(0.1)†	0.1(0.1)†	0.2(0.2)†	0.3(0.3)	LQ
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1978, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors

	1978	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	218.6(0.8)	219.0(1.1)	221.7(1.0)	229.6(0.8)	229.6(0.8)
St. Dev.	36.0(0.3)	34.8(0.4)	34.0(0.5)	32.9(0.5)	33.1(0.5)
Percentiles					
5	157.1(1.0)	159.3(1.8)	163.0(1.3)	173.3(2.6)	172.2(1.6)
10	171.1(1.2)	173.2(1.8)	176.7(1.5)	185.8(2.2)	185.4(1.2)
25	194.6(1.0)	196.0(1.1)	199.0(1.6)	207.8(1.3)	207.9(1.2)
50	220.1(1.0)	220.4(1.2)	223.3(1.1)	231.1(0.9)	231.0(0.8)
75	243.7(0.9)	243.3(1.4)	245.6(1.2)	252.5(0.7)	252.6(0.8)
90	264.0(1.2)	262.7(1.0)	264.2(1.3)	271.0(1.0)	270.9(1.3)
95	275.7(1.2)	273.8(1.3)	275.5(1.2)	282.1(1.3)	281.7(1.2)
MALE STUDENTS					
Mean	217.4(0.7)	217.1(1.2)	221.7(1.1)	229.1(0.9)	230.8(1.0)
St. Dev.	36.7(0.5)	35.8(0.5)	34.3(0.8)	33.5(0.6)	33.5(0.6)
Percentiles					
5	154.9(2.3)	156.4(2.1)	162.7(2.0)	171.8(2.5)	172.7(1.5)
10	169.0(1.3)	170.2(1.4)	176.1(1.7)	184.6(2.1)	186.1(1.4)
25	192.8(1.0)	193.0(1.5)	198.6(1.6)	206.7(1.2)	208.9(1.6)
50	218.4(0.9)	218.6(1.7)	223.0(1.0)	230.4(1.0)	232.2(1.0)
75	243.0(1.1)	242.3(1.6)	245.7(1.6)	252.4(0.8)	254.2(1.1)
90	263.8(1.2)	262.2(1.2)	265.1(1.9)	271.6(1.8)	272.5(1.2)
95	275.2(1.1)	273.6(1.9)	276.4(2.1)	282.8(1.7)	283.8(1.4)
FEMALE STUDENTS					
Mean	219.9(1.0)	220.8(1.2)	221.7(1.2)	230.2(1.1)	228.4(1.0)
St. Dev.	35.3(0.4)	33.7(0.5)	33.7(0.6)	32.4(0.6)	32.7(0.7)
Percentiles					
5	159.4(1.3)	162.8(1.7)	163.5(2.3)	174.5(2.8)	171.8(1.6)
10	173.1(2.0)	176.6(1.6)	177.5(2.6)	187.0(2.7)	184.9(1.6)
25	196.4(1.2)	198.9(1.8)	199.2(1.8)	208.9(1.3)	206.9(1.5)
50	221.5(1.0)	222.2(1.1)	223.5(1.1)	231.8(1.0)	229.9(1.0)
75	244.3(1.5)	244.2(1.4)	245.5(1.5)	252.7(1.0)	251.1(1.1)
90	264.2(1.4)	263.1(1.0)	263.3(1.6)	270.4(1.3)	269.2(1.2)
95	276.1(1.8)	273.9(1.7)	274.2(2.0)	281.4(1.1)	279.8(2.3)
WHITE STUDENTS					
Mean	224.1(0.9)	224.0(1.1)	226.9(1.1)	235.2(0.8)	235.1(0.8)
St. Dev.	34.0(0.3)	32.8(0.4)	32.6(0.5)	31.2(0.5)	31.0(0.5)
Percentiles					
5	166.3(1.5)	168.1(1.4)	170.6(2.4)	181.8(2.4)	181.8(1.5)
10	179.4(1.5)	180.8(1.7)	183.9(1.7)	194.0(1.6)	194.2(1.5)
25	201.4(1.1)	201.9(1.3)	205.3(1.1)	214.6(0.9)	215.0(0.9)
50	225.1(1.0)	225.3(1.4)	228.3(1.1)	236.3(1.0)	236.1(1.1)
75	247.7(0.8)	246.8(0.9)	249.6(0.8)	256.4(0.6)	256.4(1.0)
90	267.0(1.1)	265.3(1.0)	267.4(1.2)	274.5(0.8)	273.9(1.3)
95	278.4(1.7)	276.0(1.3)	278.2(1.8)	284.8(2.1)	284.5(1.6)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors (continued)

	1978	1982	1986	1990	1992
BLACK STUDENTS					
Mean	192.4(1.1)	194.9(1.6)	201.6(1.6)	208.4(2.2)	208.0(2.0)
St. Dev.	34.5(0.8)	33.7(0.8)	31.7(1.1)	31.5(0.8)	31.8(0.7)
Percentiles					
5	133.7(1.9)	136.7(2.5)	146.2(3.2)	156.0(1.7)	154.9(3.4)
10	147.0(1.7)	150.4(2.3)	158.4(4.9)	167.1(3.7)	165.9(2.9)
25	169.3(1.9)	172.5(2.0)	180.5(4.1)	186.0(4.1)	185.5(2.4)
50	193.0(1.1)	196.6(2.0)	202.9(1.6)	208.4(3.1)	208.6(2.1)
75	216.4(1.6)	218.2(2.0)	223.6(2.0)	231.4(2.1)	230.4(2.0)
90	236.1(1.6)	236.7(2.5)	241.2(1.7)	248.9(2.9)	249.2(2.1)
95	247.5(1.4)	247.9(2.8)	251.3(1.3)	258.9(4.3)	258.7(3.4)
HISPANIC STUDENTS					
Mean	202.9(2.2)	204.0(1.3)	205.4(2.1)	213.8(2.1)	211.9(2.3)
St. Dev.	35.1(1.4)	32.8(1.1)	31.1(1.9)	30.3(1.2)	31.9(1.4)
Percentiles					
5	144.4(5.4)	148.1(2.8)	154.8(3.7)	161.8(3.4)	158.6(4.4)
10	156.3(3.7)	160.8(3.2)	163.8(1.8)	173.4(1.4)	169.0(3.5)
25	178.7(3.2)	181.3(2.3)	184.6(3.2)	193.1(3.6)	189.7(2.2)
50	204.3(3.0)	205.2(1.6)	206.3(2.4)	216.2(4.1)	211.8(3.5)
75	227.2(2.5)	226.5(2.0)	226.0(3.8)	235.1(3.3)	233.8(3.4)
90	249.5(4.0)	246.4(3.4)	244.8(3.8)	251.7(3.4)	252.7(3.8)
95	259.6(4.6)	256.6(2.9)	254.4(4.6)	262.2(3.5)	263.1(6.8)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors

	1978	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	264.1(1.1)	268.6(1.1)	269.0(1.2)	270.4(0.9)	273.1(0.9)
St. Dev.	39.0(0.5)	33.4(0.5)	30.8(0.5)	31.1(0.5)	30.9(0.6)
Percentiles					
5	198.2(1.6)	212.4(2.7)	218.3(1.8)	217.6(2.2)	220.5(2.0)
10	213.3(1.5)	225.3(1.6)	230.0(1.4)	230.2(1.4)	233.2(1.2)
25	238.1(1.3)	246.2(1.2)	248.3(1.8)	249.8(0.9)	252.9(1.1)
50	265.2(1.1)	269.5(1.0)	268.7(1.3)	270.9(1.0)	274.1(0.7)
75	291.1(1.1)	291.6(1.1)	289.6(1.3)	291.7(1.0)	294.0(1.0)
90	313.4(1.2)	310.8(1.2)	309.2(1.5)	309.9(1.0)	311.9(1.6)
95	326.6(1.3)	322.2(1.2)	320.5(2.2)	320.1(1.6)	322.9(1.2)
MALE STUDENTS					
Mean	263.6(1.3)	269.2(1.4)	270.0(1.1)	271.2(1.2)	274.1(1.1)
St. Dev.	40.1(0.5)	34.4(0.7)	31.6(0.7)	32.4(0.7)	31.6(0.9)
Percentiles					
5	195.8(1.4)	211.5(2.2)	218.0(1.8)	215.5(2.1)	220.5(2.9)
10	211.4(1.4)	224.3(2.0)	229.5(1.7)	228.6(2.0)	233.2(2.0)
25	236.7(1.4)	246.1(1.5)	248.9(2.3)	250.2(1.7)	253.1(1.8)
50	264.8(1.4)	270.2(1.2)	270.1(1.6)	272.0(1.0)	274.9(1.0)
75	291.5(1.5)	293.3(1.2)	291.4(1.6)	293.1(1.2)	295.7(0.8)
90	314.4(1.7)	312.5(1.5)	310.8(1.5)	312.4(1.4)	314.0(1.6)
95	327.5(1.5)	324.1(1.3)	322.0(2.6)	323.1(1.9)	324.8(2.1)
FEMALE STUDENTS					
Mean	264.7(1.1)	268.0(1.1)	267.9(1.5)	269.6(0.9)	272.0(1.0)
St. Dev.	37.9(0.6)	32.3(0.5)	30.0(0.7)	29.7(0.5)	30.3(0.6)
Percentiles					
5	200.9(2.6)	213.5(1.5)	218.5(3.2)	220.4(2.3)	220.6(1.0)
10	215.0(1.6)	226.2(1.4)	230.6(2.0)	231.4(1.2)	233.0(1.3)
25	239.4(1.4)	246.3(1.1)	247.8(1.6)	249.5(1.1)	252.7(1.2)
50	265.7(1.2)	268.8(0.9)	267.4(1.7)	269.9(1.2)	273.4(1.0)
75	290.7(1.0)	290.1(1.1)	287.8(1.7)	290.3(1.3)	292.2(1.3)
90	312.4(1.4)	308.8(1.5)	307.2(2.8)	307.7(1.5)	309.8(1.2)
95	325.6(1.2)	320.1(2.0)	318.5(2.4)	317.3(0.8)	320.8(1.1)
WHITE STUDENTS					
Mean	271.6(0.8)	274.4(1.0)	273.6(1.3)	276.3(1.1)	278.9(0.9)
St. Dev.	35.7(0.5)	31.0(0.4)	29.4(0.6)	29.0(0.5)	28.5(0.5)
Percentiles					
5	211.9(1.4)	223.0(1.6)	225.7(1.5)	228.2(1.5)	230.9(1.6)
10	225.5(1.4)	234.4(1.2)	236.5(1.3)	239.3(1.0)	242.2(1.4)
25	247.6(0.9)	253.5(1.1)	254.1(1.4)	257.3(1.1)	260.5(0.8)
50	272.2(1.0)	274.9(0.9)	273.3(1.0)	276.6(1.0)	279.4(1.0)
75	296.0(0.7)	295.5(1.0)	293.2(1.3)	296.0(1.1)	298.0(1.1)
90	317.1(1.2)	313.8(1.4)	312.1(2.2)	313.2(1.3)	315.1(1.3)
95	329.6(1.3)	324.8(1.4)	322.9(1.8)	322.9(1.6)	325.2(1.4)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors (continued)

	1978	1982	1986	1990	1992
BLACK STUDENTS					
Mean	229.6(1.9)	240.4(1.6)	249.2(2.3)	249.1(2.3)	250.2(1.9)
St. Dev.	36.0(0.6)	31.0(1.1)	28.3(1.1)	28.7(1.2)	30.1(1.2)
Percentiles					
5	170.2(1.9)	189.0(4.3)	201.7(4.5)	201.6(5.4)	199.5(4.5)
10	184.1(2.6)	200.2(3.7)	213.2(2.3)	211.8(2.2)	212.3(5.1)
25	205.5(1.9)	219.3(1.8)	230.7(2.2)	229.9(3.0)	231.1(3.0)
50	229.0(2.2)	241.0(1.9)	249.3(2.3)	249.4(2.0)	250.6(1.9)
75	254.1(2.2)	260.9(1.4)	266.9(1.5)	267.8(2.9)	270.9(1.8)
90	276.4(2.4)	279.7(2.2)	284.4(3.7)	285.3(2.8)	286.5(2.1)
95	288.4(3.9)	291.1(1.7)	296.4(4.3)	296.2(4.1)	297.4(3.5)
HISPANIC STUDENTS					
Mean	238.0(2.0)	252.4(1.7)	254.3(2.9)	254.6(1.8)	259.3(1.8)
St. Dev.	35.2(1.1)	31.0(1.0)	29.3(1.3)	29.9(1.2)	28.1(1.0)
Percentiles					
5	180.2(1.8)	202.3(2.2)	205.9(3.6)	206.2(3.7)	212.2(3.5)
10	192.5(2.2)	213.5(2.6)	216.2(3.8)	216.4(3.1)	224.0(2.4)
25	214.3(1.8)	230.7(1.9)	235.5(2.7)	234.3(2.2)	240.6(3.2)
50	237.4(2.0)	251.9(1.4)	254.3(3.4)	255.1(1.9)	259.4(2.3)
75	261.9(3.2)	273.7(1.4)	274.2(2.4)	275.2(3.5)	278.6(2.9)
90	283.7(3.4)	292.8(2.4)	291.7(3.1)	292.2(2.9)	294.9(1.6)
95	296.3(3.1)	304.1(2.9)	301.2(1.9)	303.3(3.3)	304.1(3.2)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors

	1978	1982	1986	1990	1992
TOTAL SAMPLE					
Mean	300.4(1.0)	298.5(0.9)	302.0(0.9)	304.6(0.9)	306.7(0.9)
St. Dev.	34.9(0.3)	32.4(0.4)	31.0(0.5)	31.1(0.6)	30.1(0.5)
Percentiles					
5	241.3(1.3)	244.9(1.1)	251.7(1.2)	253.4(1.0)	255.6(2.1)
10	254.2(1.1)	255.9(1.0)	262.7(1.0)	264.0(1.1)	267.2(1.6)
25	276.4(1.2)	275.8(1.3)	280.7(0.6)	282.5(1.0)	286.3(1.2)
50	301.4(1.1)	298.8(1.0)	301.4(1.3)	304.9(1.1)	307.6(1.0)
75	325.4(1.0)	321.5(0.8)	323.1(1.9)	326.5(1.2)	328.0(1.0)
90	344.7(0.8)	340.6(0.9)	343.0(1.3)	344.5(1.3)	345.2(1.1)
95	355.7(0.9)	351.2(1.1)	354.0(1.1)	355.5(2.2)	354.8(1.0)
MALE STUDENTS					
Mean	303.8(1.0)	301.5(1.0)	304.7(1.2)	306.3(1.1)	308.9(1.1)
St. Dev.	35.4(0.4)	32.8(0.5)	32.0(0.7)	32.3(0.7)	30.8(0.6)
Percentiles					
5	243.8(1.2)	247.0(1.3)	252.7(3.0)	252.8(3.0)	257.8(1.7)
10	257.0(1.2)	257.9(1.2)	264.1(1.2)	263.9(1.2)	268.9(1.8)
25	278.9(1.2)	278.1(1.1)	282.3(1.8)	283.7(1.3)	287.8(1.2)
50	304.8(1.3)	301.8(1.6)	303.9(1.2)	306.4(1.6)	309.0(1.6)
75	329.5(1.1)	325.1(1.2)	327.8(2.1)	329.3(1.1)	331.4(1.1)
90	349.2(1.0)	344.4(1.1)	346.7(1.6)	347.8(1.4)	348.6(1.3)
95	360.1(1.0)	354.4(1.8)	357.5(1.7)	358.5(1.3)	358.1(1.4)
FEMALE STUDENTS					
Mean	297.1(1.0)	295.6(1.0)	299.4(1.0)	302.9(1.1)	304.5(1.1)
St. Dev.	34.0(0.4)	31.7(0.4)	29.9(0.7)	29.9(0.9)	29.3(0.7)
Percentiles					
5	239.3(1.3)	242.8(1.6)	250.3(2.8)	253.9(1.9)	253.7(2.3)
10	252.2(1.0)	254.1(1.2)	261.2(1.4)	264.0(1.5)	265.6(2.4)
25	274.3(1.3)	273.7(1.2)	279.3(1.3)	281.5(1.3)	284.8(1.1)
50	298.3(1.1)	296.1(1.2)	299.1(1.3)	303.7(1.7)	305.8(1.5)
75	321.5(1.0)	317.7(0.8)	319.8(1.7)	324.1(1.2)	324.8(1.2)
90	340.3(1.4)	336.7(1.7)	338.2(2.2)	341.4(1.6)	341.4(2.1)
95	350.4(1.5)	347.2(1.5)	349.3(1.9)	351.8(2.2)	350.6(2.3)
WHITE STUDENTS					
Mean	305.9(0.9)	303.7(0.9)	307.5(1.0)	309.5(1.0)	311.9(0.8)
St. Dev.	32.3(0.2)	30.4(0.4)	29.1(0.6)	29.5(0.5)	28.4(0.5)
Percentiles					
5	251.9(0.6)	253.3(1.1)	261.2(1.6)	260.2(1.3)	264.1(2.0)
10	263.3(1.3)	263.8(1.1)	270.5(1.3)	270.5(1.5)	274.4(1.4)
25	283.5(1.0)	282.3(1.1)	286.9(1.2)	288.8(1.5)	292.8(1.1)
50	306.6(1.0)	303.9(1.2)	306.8(1.3)	310.1(1.3)	312.8(1.0)
75	328.9(0.8)	325.1(0.9)	327.8(1.7)	330.1(1.2)	332.2(1.0)
90	347.3(0.7)	343.4(1.1)	346.1(1.3)	347.2(1.0)	348.0(1.0)
95	357.8(0.7)	353.4(1.5)	356.0(1.4)	357.1(1.3)	357.4(1.2)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of mathematics distributions with jackknifed standard errors (continued)

	1978	1982	1986	1990	1992
BLACK STUDENTS					
Mean	268.4(1.3)	271.8(1.2)	278.6(2.1)	288.5(2.8)	285.8(2.2)
St. Dev.	31.8(1.0)	29.2(0.7)	26.4(1.4)	27.9(1.7)	27.5(1.3)
Percentiles					
5	217.2(2.0)	225.1(1.4)	236.7(3.9)	245.4(4.4)	238.5(4.3)
10	227.8(1.7)	234.5(1.7)	244.3(4.2)	253.5(3.5)	248.9(6.9)
25	245.7(1.2)	251.4(1.6)	259.9(1.6)	268.7(1.8)	267.4(3.8)
50	267.7(1.6)	271.2(1.4)	278.6(3.9)	287.1(2.5)	286.9(1.9)
75	290.5(2.2)	291.2(1.7)	296.1(2.5)	307.1(5.3)	303.9(3.9)
90	310.3(2.1)	310.8(1.7)	312.0(7.4)	325.7(5.8)	320.8(2.3)
95	320.7(2.5)	321.3(2.2)	324.8(4.1)	337.7(4.2)	330.8(3.0)
HISPANIC STUDENTS					
Mean	276.3(2.3)	276.7(1.8)	283.1(2.9)	283.5(2.9)	292.2(2.6)
St. Dev.	32.9(1.0)	29.3(1.0)	28.7(2.0)	31.8(1.8)	26.9(1.0)
Percentiles					
5	224.1(4.4)	232.0(1.7)	236.3(5.3)	229.1(5.4)	247.5(4.3)
10	234.0(2.9)	240.7(3.2)	248.5(4.5)	242.2(8.1)	257.8(3.5)
25	253.4(1.8)	255.8(2.4)	264.7(2.8)	263.8(6.8)	273.3(4.5)
50	275.1(3.6)	275.3(3.2)	283.1(2.5)	281.8(2.4)	291.6(3.4)
75	298.5(3.9)	297.1(2.6)	301.2(4.2)	304.0(4.4)	310.7(3.7)
90	319.5(3.9)	314.9(2.6)	318.6(2.3)	325.1(3.6)	327.7(4.8)
95	332.0(0.9)	326.7(4.4)	329.3(7.3)	336.3(8.6)	336.4(2.7)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Apply concept of probability	1992	41.8(1.2)	43.6(1.7)	39.9(1.5)	44.4(1.1)	33.5(3.1)	28.2(2.0)
	1990	39.0(1.3)	40.1(1.7)	37.8(1.9)	40.9(1.7)	29.9(2.5)	34.6(3.4)
	1986	37.1(1.3)	39.4(1.9)	34.5(2.2)	38.3(1.5)	35.9(1.9)	25.4(3.9)
	1982	43.6(1.6)	43.8(2.4)	43.3(1.7)	45.2(1.9)	36.0(3.9)	34.8(3.6)
	1978	42.6(1.3)	45.6(2.0)	39.5(1.9)	45.3(1.4)	29.1(2.8)	36.2(3.6)
Read tally chart	1992	88.5(1.0)	87.9(1.1)	89.1(1.2)	92.2(0.7)	74.0(3.1)	77.8(4.0)
	1990	83.1(1.6)	83.2(1.7)	82.9(1.8)	88.2(1.4)	61.6(3.9)	75.6(5.5)
	1986	70.1(1.6)	71.1(1.7)	69.0(2.1)	74.8(1.8)	51.5(4.0)	57.2(8.2)
	1982	63.5(2.2)	63.7(2.1)	63.3(2.9)	68.4(2.2)	38.0(4.1)	57.5(3.8)
Interpret tally chart	1992	82.6(1.1)	83.5(1.4)	81.7(1.4)	86.2(0.9)	70.1(3.2)	68.9(2.8)
	1990	80.4(1.7)	79.8(1.9)	81.1(1.8)	83.6(1.4)	66.8(5.0)	73.6(4.2)
	1986	71.6(1.4)	72.3(1.6)	70.7(1.7)	74.5(1.6)	59.7(3.3)	65.2(6.1)
	1982	72.8(1.7)	71.4(2.1)	74.3(1.8)	76.0(2.0)	55.3(2.7)	67.8(4.3)
Interpret tally chart	1992	56.2(1.2)	56.3(1.6)	56.1(1.6)	60.8(1.4)	38.4(2.9)	41.9(4.0)
	1990	51.6(1.5)	52.7(2.1)	50.4(1.9)	56.5(1.7)	31.7(3.8)	39.0(3.7)
	1986	44.9(1.7)	46.7(2.1)	43.0(1.8)	49.6(1.9)	27.0(2.3)	29.0(5.6)
	1982	40.0(1.7)	40.6(2.3)	39.3(2.2)	44.4(2.0)	17.7(2.4)	30.5(3.7)
Read data from table	1992	80.0(1.2)	78.5(1.6)	81.3(1.4)	81.2(1.3)	76.4(1.8)	72.2(5.1)
	1990	81.3(1.1)	77.1(1.7)	85.3(1.4)	83.4(1.0)	73.8(3.2)	73.2(4.3)
	1986	76.0(1.4)	72.5(2.0)	79.3(1.5)	78.1(1.8)	67.6(3.6)	70.5(5.5)
	1982	76.2(1.3)	75.2(1.9)	77.2(1.3)	78.4(1.1)	65.3(3.1)	69.1(4.5)
	1978	72.8(1.0)	70.0(1.4)	75.5(1.5)	76.0(1.1)	59.7(3.9)	59.0(5.9)
Interpret data in table	1992	41.8(1.5)	41.2(2.1)	42.3(1.9)	46.7(1.4)	25.4(3.5)	23.3(4.6)
	1990	44.5(1.5)	43.0(1.6)	46.0(2.3)	49.7(1.9)	27.2(2.9)	28.5(4.3)
	1986	35.8(1.7)	36.3(2.3)	35.4(2.0)	40.1(2.3)	19.4(2.2)	23.3(4.1)
	1982	36.6(2.2)	36.0(2.2)	37.2(2.8)	40.9(2.7)	20.7(2.2)	19.4(3.5)
	1978	36.6(1.4)	37.5(1.7)	35.8(1.6)	39.6(1.6)	26.3(3.2)	23.2(4.9)
Compute using data in table	1992	64.3(1.3)	65.5(1.6)	63.2(1.5)	68.2(1.5)	51.2(2.2)	44.9(5.5)
	1990	67.8(1.4)	65.8(2.3)	69.6(1.6)	71.8(1.5)	53.6(4.0)	55.1(4.2)
	1986	60.9(1.9)	58.8(2.2)	62.9(2.0)	64.2(2.3)	47.9(2.4)	46.8(4.9)
	1982	54.9(1.8)	54.1(1.9)	55.7(2.5)	59.3(2.0)	33.4(2.7)	45.1(5.7)
	1978	54.9(1.7)	54.7(1.8)	55.0(2.3)	59.6(1.9)	32.9(3.1)	42.7(8.6)
Read data in bar graph	1992	82.8(0.8)	81.1(1.2)	84.5(1.4)	84.7(0.8)	75.8(2.0)	74.6(3.2)
	1990	82.7(1.1)	82.0(1.7)	83.4(1.2)	85.2(1.1)	73.3(3.2)	76.1(4.2)
	1986	75.8(1.2)	74.3(1.7)	77.5(1.3)	77.4(1.3)	71.0(3.0)	72.7(3.9)
	1982	67.0(1.7)	62.6(2.4)	71.2(1.9)	70.5(2.0)	47.8(5.1)	61.6(4.7)
	1978	53.8(1.9)	53.7(2.2)	53.9(2.2)	58.0(2.2)	36.2(3.0)	38.2(3.3)
Interpret data in bar graph	1992	43.4(1.5)	47.0(1.8)	39.8(2.0)	47.6(1.8)	29.7(2.2)	26.9(4.7)
	1990	42.1(1.7)	43.0(2.2)	41.2(2.4)	47.2(1.8)	27.6(3.1)	20.8(4.0)
	1986	33.4(1.3)	35.9(1.5)	30.7(1.5)	37.7(1.5)	16.9(2.0)	23.3(4.0)
	1982	26.2(1.9)	26.1(1.7)	26.3(2.7)	29.8(2.3)	16.2(2.0)	11.8(2.4)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
	1978	23.9(1.3)	26.3(1.6)	21.4(1.7)	25.7(1.6)	17.3(2.5)	16.5(3.4)
Compute with data in bar graph	1992	57.8(1.4)	59.5(1.8)	56.1(1.6)	61.8(1.3)	42.9(3.1)	45.1(5.1)
	1990	55.2(1.7)	56.3(1.9)	54.1(2.3)	59.4(1.7)	39.9(2.8)	40.9(4.0)
	1986	49.1(1.4)	51.7(1.7)	46.3(1.7)	54.7(1.7)	29.3(2.1)	31.7(3.0)
	1982	34.9(1.5)	37.8(2.4)	32.1(2.4)	38.5(1.8)	16.8(1.9)	24.1(5.1)
	1978	28.6(1.5)	29.4(1.9)	27.7(1.9)	31.9(1.8)	16.6(3.1)	11.3(3.6)
Solve time problem	1992	71.5(1.2)	73.8(1.4)	69.3(1.5)	74.1(1.2)	58.6(2.3)	68.9(4.6)
	1990	72.4(1.3)	75.7(1.4)	69.1(1.9)	74.5(1.3)	63.0(4.0)	67.5(3.9)
	1986	65.3(1.5)	69.7(1.9)	60.6(1.9)	68.7(1.7)	49.8(2.5)	56.4(5.8)
	1982	57.6(1.5)	58.4(2.2)	56.8(2.1)	61.7(1.8)	36.6(2.5)	47.2(4.4)
Find perimeter of rectangle	1992	22.4(1.3)	23.9(1.6)	20.9(1.5)	24.1(1.6)	17.1(2.3)	15.8(2.4)
	1990	20.0(1.2)	23.7(1.8)	16.4(1.3)	21.0(1.3)	14.9(2.4)	18.2(2.6)
	1986	15.8(1.1)	16.6(1.4)	14.9(1.2)	17.5(1.2)	10.3(1.5)	9.8(3.2)
	1982	11.5(1.1)	12.7(1.6)	10.2(1.1)	11.0(1.3)	13.8(2.0)	11.5(2.2)
Find perimeter of rectangle	1992	25.1(1.6)	26.4(1.8)	23.8(1.9)	27.5(1.9)	14.8(2.3)	19.9(4.3)
	1990	24.9(1.6)	26.0(2.4)	24.0(1.5)	27.0(2.1)	17.0(2.4)	17.4(4.0)
	1986	18.5(1.2)	20.4(1.6)	16.7(1.2)	19.0(1.5)	16.9(2.5)	10.8(3.2)
	1982	24.8(1.7)	25.6(1.9)	24.0(2.4)	26.9(2.0)	12.9(1.7)	21.3(4.3)
Determine distance on map	1992	15.0(0.9)	15.3(1.1)	14.8(1.1)	13.6(1.0)	19.5(2.6)	22.1(3.3)
	1990	14.1(1.0)	14.1(1.4)	14.1(1.2)	13.5(1.1)	15.7(2.2)	14.8(3.0)
	1986	15.7(1.0)	15.5(1.4)	15.8(1.2)	14.8(1.3)	19.8(2.0)	17.1(3.2)
	1982	19.0(1.1)	19.0(1.6)	19.1(1.5)	17.7(1.2)	23.2(2.8)	30.0(2.4)
Understand place value	1992	74.2(1.1)	77.6(1.4)	71.1(1.3)	78.7(1.1)	56.8(3.5)	61.5(6.0)
	1990	75.7(1.4)	77.4(1.7)	74.1(1.9)	81.1(1.4)	56.5(4.0)	63.4(4.6)
	1986	70.3(1.4)	71.3(1.8)	69.5(1.7)	75.5(1.5)	50.5(2.3)	50.5(6.0)
	1982	73.0(1.8)	75.1(2.6)	71.0(2.0)	77.1(1.9)	55.3(3.1)	57.2(5.0)
	1978	79.9(1.2)	81.3(1.8)	78.6(1.5)	84.9(1.1)	56.0(3.2)	69.8(4.3)
Identify greatest number	1992	81.7(0.8)	81.9(1.2)	81.4(1.3)	84.3(1.0)	69.9(3.1)	73.8(3.6)
	1990	80.5(1.2)	81.0(1.4)	80.1(1.6)	83.1(1.2)	71.0(2.6)	78.5(2.6)
	1986	76.9(1.3)	77.0(1.5)	76.8(1.5)	78.1(1.5)	71.3(2.2)	76.5(3.7)
	1982	75.3(1.4)	73.9(1.3)	76.7(2.1)	77.1(1.5)	66.7(2.3)	69.6(5.0)
	1978	75.1(1.0)	73.1(1.6)	77.0(1.1)	78.2(1.0)	62.6(3.1)	62.5(3.1)
Relate part to whole	1992	29.4(1.1)	30.9(1.5)	28.0(1.3)	31.9(1.4)	20.3(2.7)	20.5(3.1)
	1990	29.6(1.8)	30.5(2.3)	28.7(2.3)	30.8(1.9)	26.9(2.8)	25.7(3.4)
	1986	31.5(1.4)	33.0(1.7)	30.0(1.6)	33.6(1.6)	23.9(2.6)	23.5(3.1)
	1982	42.1(1.6)	44.4(2.0)	39.8(2.2)	45.5(2.0)	29.3(1.7)	24.2(4.4)
	1978	44.0(1.4)	43.7(1.5)	44.2(2.0)	46.6(1.5)	34.1(2.6)	30.5(3.9)
Estimate large number	1992	66.2(1.2)	68.0(1.5)	64.3(1.6)	70.1(1.3)	49.6(3.6)	56.6(3.2)
	1990	65.3(1.2)	66.9(1.6)	63.6(1.6)	68.8(1.3)	51.7(3.3)	51.8(3.8)
	1986	62.3(0.9)	63.2(1.3)	61.3(1.3)	65.1(1.2)	49.1(2.2)	56.5(4.1)
	1982	63.1(1.7)	62.8(1.8)	63.4(2.2)	65.8(1.9)	50.1(2.9)	53.9(6.0)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Use property of transitivity	1992	73.2(1.6)	70.3(1.7)	75.9(2.0)	76.5(1.3)	59.7(4.5)	61.8(6.6)
	1990	76.8(1.2)	73.8(1.4)	79.7(1.5)	79.1(1.3)	68.9(3.1)	69.8(5.3)
	1986	72.6(1.8)	69.7(2.1)	75.3(2.1)	74.7(2.1)	61.7(3.7)	69.2(6.1)
	1982	78.0(1.2)	76.9(1.8)	79.0(1.2)	80.7(1.1)	64.8(3.8)	74.8(5.4)
	1978	73.3(1.2)	69.4(1.4)	77.3(1.7)	75.4(1.4)	68.1(2.5)	54.8(5.6)
Determine age relationship	1992	56.1(1.3)	60.5(1.7)	52.1(1.7)	59.6(1.5)	42.2(3.1)	46.6(4.4)
	1990	55.9(1.5)	55.9(1.9)	55.9(2.0)	59.6(1.5)	42.3(4.4)	43.3(2.9)
	1986	54.4(1.1)	57.3(1.3)	51.6(1.9)	57.2(1.4)	40.5(3.3)	55.1(3.7)
	1982	48.2(1.3)	49.2(1.8)	47.4(1.6)	50.6(1.4)	37.5(3.0)	42.5(3.9)
	1978	49.7(1.5)	50.0(1.8)	49.5(2.0)	50.9(1.8)	43.8(2.4)	43.6(8.6)
Identify valid conclusion	1992	63.1(1.0)	63.5(1.2)	62.6(1.5)	66.2(1.2)	54.2(2.7)	51.0(3.8)
	1990	65.7(1.2)	64.7(1.9)	66.7(1.9)	68.8(1.7)	57.6(3.4)	50.2(4.7)
	1986	63.4(1.5)	61.8(2.3)	65.0(1.7)	66.1(1.5)	53.3(3.3)	57.7(4.4)
	1982	60.2(1.5)	58.4(2.3)	61.8(1.8)	60.8(1.7)	57.4(2.6)	55.9(4.1)
	1978	66.7(1.5)	65.5(1.9)	67.9(2.1)	67.7(1.5)	60.7(3.3)	66.8(5.0)
Identify valid conclusion	1992	21.8(0.8)	20.3(1.1)	23.2(1.4)	22.6(1.0)	19.2(2.1)	22.3(3.2)
	1990	22.9(1.0)	22.9(1.4)	22.8(1.5)	22.7(1.2)	21.4(2.8)	26.6(3.1)
	1986	22.0(0.9)	20.5(1.3)	23.5(1.4)	22.0(1.0)	23.7(2.5)	18.6(2.8)
	1982	23.6(1.3)	24.2(1.7)	23.0(1.8)	24.5(1.5)	20.0(2.7)	21.1(2.1)
	1978	25.1(1.3)	25.5(1.9)	24.7(1.4)	26.3(1.4)	21.2(3.0)	20.1(3.9)
Read Circle graph	1992	84.3(1.0)	83.1(1.2)	85.5(1.3)	87.1(1.0)	73.9(2.7)	73.1(4.6)
	1990	83.9(1.4)	82.0(1.7)	85.8(1.6)	86.9(1.3)	75.1(3.9)	73.1(4.6)
	1986	77.6(1.4)	77.4(1.6)	77.7(1.6)	80.5(1.5)	70.1(2.7)	62.3(5.6)
	1982	82.6(1.2)	80.9(1.6)	84.3(1.3)	85.8(1.2)	67.4(2.5)	76.5(6.1)
	1978	74.7(1.5)	72.0(2.0)	77.2(1.6)	78.1(1.4)	56.7(3.3)	68.2(4.0)
Interpret data in circle graph	1992	72.4(1.2)	68.9(1.9)	76.0(1.3)	75.8(1.3)	63.8(3.0)	54.8(4.9)
	1990	72.2(1.5)	69.9(1.9)	74.5(1.8)	76.1(1.6)	60.6(3.6)	61.2(3.9)
	1986	60.5(1.8)	57.6(1.9)	63.7(2.0)	63.6(1.8)	50.1(2.9)	49.9(8.1)
	1982	72.8(1.5)	70.2(1.7)	75.4(1.9)	76.0(1.2)	54.6(3.9)	73.0(5.3)
	1978	59.1(1.6)	54.0(2.2)	63.7(1.8)	62.3(1.7)	44.6(3.1)	45.5(5.0)
Estimate weight (metric)	1992	24.4(1.3)	26.9(1.7)	22.1(1.7)	24.2(1.4)	25.1(3.2)	21.6(3.0)
	1990	23.0(1.2)	25.6(1.6)	20.6(1.6)	22.6(1.4)	22.2(2.3)	30.6(5.3)
	1986	24.5(1.3)	29.0(1.6)	20.2(1.7)	23.7(1.3)	29.5(3.7)	22.6(4.6)
	1982	37.2(1.7)	38.9(2.0)	35.3(2.3)	35.4(2.0)	45.0(2.5)	40.8(5.1)
Identify greatest metric unit	1992	41.9(1.8)	45.9(2.3)	38.3(2.4)	44.3(2.2)	34.5(3.1)	28.8(2.9)
	1990	38.4(2.3)	41.5(2.8)	35.5(2.4)	41.1(2.6)	26.0(2.9)	34.0(4.9)
	1986	28.5(1.8)	32.4(1.9)	24.8(2.2)	30.0(1.9)	22.0(2.8)	23.7(4.9)
	1982	38.5(1.9)	41.0(1.7)	36.1(2.5)	39.5(2.2)	36.6(3.3)	31.2(2.3)
	1978	36.6(1.5)	37.2(1.9)	36.0(2.0)	38.2(1.6)	24.6(1.5)	38.3(4.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Read scale	1992	86.8(0.9)	87.3(1.1)	86.3(1.1)	90.1(0.8)	74.2(3.0)	80.4(3.4)
	1990	87.2(1.1)	87.0(1.4)	87.5(1.3)	90.7(0.9)	72.1(4.9)	80.3(2.9)
	1986	83.8(1.0)	85.2(1.3)	82.3(1.2)	87.5(1.0)	68.3(2.6)	75.4(3.4)
	1982	79.5(1.2)	79.2(1.4)	79.8(1.5)	84.3(0.9)	57.1(2.8)	70.1(2.8)
	1978	80.3(1.1)	81.1(1.5)	79.5(1.5)	84.1(1.1)	63.4(2.7)	72.0(4.3)
Identify greatest money value	1992	73.2(1.2)	76.5(1.6)	70.2(1.5)	78.6(1.1)	54.1(2.7)	52.4(4.1)
	1990	77.5(1.1)	79.8(1.6)	75.3(1.6)	82.1(1.2)	62.5(3.2)	65.6(4.3)
	1986	74.4(1.4)	76.5(1.9)	72.4(1.6)	79.1(1.6)	56.5(3.5)	63.6(5.3)
	1982	74.3(1.5)	76.7(1.6)	72.1(1.8)	78.9(1.4)	54.7(3.1)	57.7(5.4)
	1978	76.0(1.3)	77.5(1.7)	74.5(1.7)	80.5(1.3)	57.3(4.7)	57.8(4.8)
Identify greatest money value	1992	57.3(1.4)	61.2(1.6)	53.7(1.7)	62.9(1.5)	36.4(2.1)	38.3(4.5)
	1990	61.6(1.5)	63.8(1.9)	59.5(2.0)	66.6(1.9)	44.0(3.1)	53.3(4.6)
	1986	56.7(1.9)	58.8(2.3)	54.7(2.5)	60.9(1.9)	40.8(4.4)	38.4(4.7)
	1982	57.5(1.5)	59.2(2.3)	55.9(1.9)	62.2(1.5)	37.4(3.1)	38.0(4.5)
	1978	61.4(1.4)	62.3(1.8)	60.5(1.9)	65.5(1.5)	41.9(4.2)	50.0(4.7)
Solve money problem	1992	43.1(1.2)	47.4(1.7)	39.3(1.7)	46.9(1.3)	29.1(3.2)	28.7(4.6)
	1990	43.2(1.4)	43.2(1.9)	43.2(1.7)	46.8(1.6)	29.7(3.5)	30.5(3.9)
	1986	37.9(1.3)	37.2(1.7)	38.6(2.0)	42.5(1.6)	21.8(2.7)	22.6(2.3)
	1982	34.2(1.4)	33.8(1.5)	34.6(2.0)	36.5(1.4)	23.3(2.2)	26.8(3.5)
	1978	37.9(1.2)	40.7(1.6)	35.1(1.5)	40.8(1.3)	25.9(2.6)	28.8(5.1)
Solve money problem	1992	39.3(1.1)	41.7(1.6)	37.1(1.6)	43.9(1.4)	21.3(2.5)	21.5(3.4)
	1990	35.1(1.9)	35.4(2.0)	34.8(2.3)	38.7(2.1)	21.1(4.2)	23.6(4.0)
	1986	29.9(1.6)	31.6(2.3)	28.3(1.7)	32.7(1.9)	20.3(2.8)	17.9(3.6)
	1982	28.9(1.6)	31.5(1.7)	26.4(2.0)	31.9(2.0)	15.4(2.3)	15.9(3.2)
	1978	31.1(1.6)	31.2(2.0)	31.1(2.0)	34.4(1.8)	17.7(2.4)	20.1(4.0)
Find area of rectangle	1992	9.5(0.9)	9.8(1.1)	9.1(1.1)	9.1(0.9)	10.8(2.5)	8.9(3.2)
	1990	9.9(1.4)	9.3(1.4)	10.4(1.9)	10.1(1.6)	7.9(2.1)	5.5(2.1)
	1986	9.2(1.0)	8.6(1.1)	9.8(1.3)	9.6(1.3)	8.4(1.7)	3.5(1.8)
	1982	8.4(1.1)	7.8(1.3)	8.9(1.6)	9.0(1.4)	4.2(1.2)	7.9(3.1)
	1978	3.4(0.5)	3.0(0.5)	3.9(0.7)	3.8(0.6)	2.0(0.6)	2.1(1.5)
Find area of rectangle	1992	32.9(1.6)	35.2(2.0)	30.8(2.0)	34.5(1.8)	29.8(3.5)	21.3(3.6)
	1990	33.6(1.5)	34.2(2.0)	33.0(1.8)	35.4(1.7)	29.8(2.9)	19.6(3.6)
	1986	29.3(1.3)	30.6(1.8)	28.0(1.6)	30.1(1.3)	25.8(3.9)	22.1(3.3)
	1982	24.8(1.6)	26.2(2.2)	23.5(1.9)	25.0(1.9)	21.5(3.0)	24.3(4.1)
	1978	27.7(1.4)	26.2(1.7)	29.2(2.1)	28.0(1.6)	26.4(2.7)	22.2(4.6)
Apply property of square	1992	60.4(1.3)	60.9(1.7)	60.0(1.8)	65.7(1.5)	40.2(3.6)	46.1(3.9)
	1990	64.8(1.5)	64.4(1.9)	65.2(1.8)	70.4(1.3)	44.6(3.9)	53.8(4.2)
	1986	62.4(1.5)	62.0(1.6)	62.7(2.1)	68.1(1.5)	41.7(2.9)	42.8(4.5)
	1982	64.5(1.7)	63.0(2.0)	66.0(2.1)	69.4(1.9)	41.1(3.1)	54.0(5.4)
	1978	66.4(1.4)	66.4(1.9)	66.4(1.6)	71.6(1.3)	40.3(2.6)	57.6(4.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Solve number sentence	1992	94.5(0.8)	94.2(1.0)	94.8(0.8)	95.4(0.7)	90.6(1.7)	91.7(4.2)
	1990	94.7(0.7)	94.1(1.0)	95.3(0.9)	95.4(0.6)	92.0(1.9)	93.8(2.1)
	1986	92.3(0.6)	92.0(0.9)	92.7(0.9)	93.9(0.8)	85.1(2.0)	88.5(3.1)
	1982	90.7(0.8)	88.5(1.1)	92.8(0.9)	92.4(0.8)	82.9(2.2)	85.0(3.0)
	1978	92.3(1.1)	91.0(1.6)	93.6(1.0)	94.8(0.8)	78.2(4.5)	90.2(2.6)
Solve number sentence	1992	51.3(1.4)	52.6(1.6)	50.0(1.8)	54.5(1.4)	37.1(2.9)	45.5(4.1)
	1990	47.0(1.4)	46.9(2.0)	47.0(1.8)	49.5(1.5)	37.1(2.7)	38.3(4.5)
	1986	50.5(1.8)	51.9(2.1)	48.9(2.0)	52.4(2.1)	44.9(3.3)	40.0(8.6)
	1982	55.9(1.8)	53.9(2.0)	57.9(2.6)	57.9(2.0)	47.0(2.8)	45.5(6.3)
	1978	63.1(1.7)	61.4(1.8)	64.8(2.3)	66.3(1.6)	46.4(4.0)	53.8(8.1)
Understand place value	1992	81.4(1.1)	82.2(1.3)	80.7(1.4)	83.2(0.9)	75.0(3.5)	74.4(3.8)
	1990	78.8(1.4)	78.6(1.8)	79.1(1.8)	81.5(1.5)	66.4(3.8)	70.5(3.3)
	1986	72.7(1.5)	71.9(1.7)	73.5(2.0)	74.5(1.7)	68.3(2.3)	62.3(6.8)
	1982	76.6(1.8)	74.7(2.1)	78.7(2.3)	78.3(2.1)	70.0(3.3)	66.4(5.5)
Understand place value	1992	62.3(1.5)	63.7(1.8)	60.9(1.7)	66.9(1.4)	44.9(3.2)	45.6(6.5)
	1990	64.6(1.7)	64.6(2.3)	64.6(1.8)	67.9(2.0)	51.1(3.9)	61.8(4.4)
	1986	59.3(1.6)	57.4(2.0)	61.1(1.9)	62.5(2.0)	46.2(4.6)	49.5(4.5)
	1982	63.0(2.1)	61.7(2.3)	64.4(2.5)	65.8(2.5)	50.0(3.3)	50.7(2.8)
Apply multiplication	1992	94.4(0.6)	94.5(0.7)	94.3(0.7)	96.1(0.5)	88.6(1.6)	89.6(2.6)
	1990	94.3(0.7)	93.9(0.9)	94.6(1.1)	95.6(0.7)	89.0(1.9)	91.4(2.8)
	1986	91.8(0.6)	92.2(0.9)	91.3(0.7)	93.3(0.7)	87.1(1.8)	88.3(3.2)
	1982	92.7(0.7)	92.0(1.1)	93.4(0.9)	94.4(0.5)	86.2(2.7)	85.8(2.7)
Translate words to numbers	1992	91.0(0.7)	90.8(0.9)	91.2(1.0)	93.1(0.7)	83.6(2.1)	84.7(2.4)
	1990	90.0(1.1)	88.6(1.3)	91.4(1.3)	92.4(0.9)	81.4(4.0)	80.0(4.0)
	1986	84.4(1.1)	81.8(1.7)	86.9(1.0)	87.6(1.2)	74.0(2.7)	71.3(4.5)
	1982	87.8(0.7)	84.7(1.1)	91.0(0.7)	89.0(0.7)	80.5(2.2)	86.5(2.7)
Identify true statement	1992	77.7(1.1)	76.4(1.4)	78.9(1.6)	79.7(1.1)	67.8(2.8)	74.7(3.9)
	1990	77.2(1.3)	75.9(2.0)	7[illegible].5(1.8)	79.4(1.3)	71.9(2.7)	63.6(5.8)
	1986	69.8(1.9)	71.0(1.8)	68.6(2.6)	72.6(2.2)	59.9(3.5)	61.2(7.5)
	1982	75.7(2.1)	74.4(2.4)	77.1(2.1)	78.1(2.4)	68.4(3.0)	60.0(6.0)
Write multiplication sentence	1992	71.2(1.7)	70.0(1.7)	72.4(2.2)	74.0(1.9)	59.6(3.0)	59.2(4.4)
	1990	70.6(1.6)	69.7(2.0)	71.5(1.9)	73.0(1.6)	62.1(3.7)	58.7(4.5)
	1986	66.3(1.6)	66.9(1.7)	65.8(2.1)	69.4(2.1)	57.5(2.8)	54.0(5.2)
	1982	67.0(2.1)	63.4(2.1)	70.3(2.8)	71.0(2.3)	48.6(3.1)	54.4(5.8)
	1978	66.6(1.4)	67.1(1.7)	66.1(2.1)	72.0(1.4)	44.5(3.9)	44.4(4.5)
Divide whole numbers	1992	72.2(1.7)	72.6(1.9)	71.8(2.0)	73.0(1.7)	66.9(4.0)	69.5(4.2)
	1990	72.3(1.8)	70.3(2.0)	74.3(2.0)	72.3(1.9)	70.9(3.3)	64.7(4.2)
	1986	72.7(1.6)	71.1(1.9)	74.4(1.8)	72.6(1.7)	75.2(3.2)	68.4(7.2)
	1982	74.4(1.3)	72.8(1.7)	76.1(1.6)	76.0(1.7)	65.7(2.5)	70.8(4.8)
	1978	74.2(1.4)	73.4(1.7)	75.1(1.8)	77.2(1.5)	62.1(3.9)	65.2(6.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Divide whole numbers	1992	26.5(1.9)	27.6(1.9)	25.4(2.2)	27.8(2.0)	17.6(2.7)	22.1(4.8)
	1990	25.9(1.9)	26.5(2.0)	25.4(2.2)	26.6(2.2)	20.9(2.8)	21.2(3.0)
	1986	18.8(1.2)	19.5(1.8)	18.2(1.3)	19.4(1.4)	18.4(4.1)	11.0(4.4)
	1982	14.2(1.5)	14.5(1.5)	14.0(1.9)	14.3(1.8)	11.5(1.6)	14.7(3.6)
	1978	18.7(1.5)	17.6(1.4)	19.8(2.2)	20.1(1.7)	13.3(2.4)	13.7(4.5)
Divide whole numbers	1992	80.5(1.2)	79.9(1.4)	80.9(1.7)	82.0(1.4)	74.6(2.4)	71.6(4.3)
	1990	77.3(1.5)	70.8(2.0)	84.0(1.6)	79.0(1.5)	67.0(3.9)	79.3(2.8)
	1986	73.9(1.0)	71.0(1.6)	76.7(1.3)	75.7(1.2)	66.4(2.4)	66.7(5.4)
	1982	77.7(1.8)	74.8(1.7)	80.7(2.6)	79.6(1.8)	67.9(3.6)	73.2(6.6)
	1978	75.5(1.7)	71.7(1.9)	79.6(2.0)	79.0(1.6)	62.1(4.1)	58.9(7.4)
Divide whole numbers	1992	74.1(1.4)	71.4(1.7)	76.5(1.8)	76.6(1.5)	64.6(3.3)	63.1(4.1)
	1990	69.3(1.5)	63.9(2.2)	74.9(1.9)	72.3(1.3)	56.0(4.2)	65.3(3.3)
	1986	64.0(1.6)	58.3(2.1)	69.5(1.8)	66.6(1.5)	51.8(4.5)	58.1(6.9)
	1982	67.8(2.1)	63.7(2.4)	71.9(2.4)	70.1(2.6)	52.7(3.2)	66.9(5.6)
	1978	70.2(1.6)	65.9(1.9)	75.0(1.8)	74.5(1.5)	53.9(3.8)	51.8(7.7)
Apply Operation of subtraction	1992	75.8(1.3)	78.5(1.5)	73.3(1.5)	82.6(1.2)	50.8(3.1)	57.3(5.0)
	1990	75.9(1.2)	78.1(1.4)	73.8(1.7)	82.7(1.0)	51.7(3.3)	61.9(4.7)
	1986	70.6(1.5)	70.4(2.1)	70.7(1.7)	76.1(1.7)	47.0(3.0)	61.7(6.0)
	1982	71.5(2.1)	73.0(2.2)	70.2(2.5)	77.3(2.3)	47.4(2.8)	50.6(3.5)
	1978	69.5(1.6)	70.7(2.1)	68.2(1.6)	74.5(1.5)	48.6(4.5)	54.0(6.2)
Determine amount of change	1992	82.7(1.0)	85.6(1.4)	79.8(1.1)	86.0(1.0)	70.2(2.2)	73.8(3.1)
	1990	83.5(1.0)	85.0(1.4)	82.1(1.3)	86.6(1.0)	71.4(2.9)	74.1(3.7)
	1986	81.2(1.0)	84.7(1.4)	77.4(1.3)	84.2(1.0)	68.3(3.6)	75.9(4.6)
	1982	82.6(1.1)	83.7(1.3)	81.4(1.8)	85.4(1.2)	70.0(4.3)	71.7(3.6)
Add whole numbers	1992	95.9(0.5)	95.8(0.8)	96.0(0.5)	96.3(0.6)	94.3(1.2)	94.8(1.7)
	1990	96.6(0.4)	96.7(0.6)	96.5(0.6)	97.4(0.4)	93.8(1.4)	90.8(1.6)
	1986	95.9(0.4)	94.5(0.7)	97.1(0.5)	96.1(0.5)	95.7(0.9)	94.4(1.6)
	1982	89.8(0.9)	89.9(1.4)	89.6(1.1)	90.2(1.0)	86.0(2.3)	91.5(1.4)
Add whole numbers	1992	88.5(0.7)	87.4(1.0)	89.6(0.8)	89.7(0.8)	81.9(2.4)	88.6(4.0)
	1990	89.7(0.9)	89.4(1.2)	90.1(1.1)	91.7(0.9)	83.0(2.4)	82.9(3.7)
	1986	86.6(1.0)	83.8(1.2)	89.3(1.2)	88.0(1.1)	79.1(2.6)	86.1(2.6)
	1982	83.8(0.9)	81.8(1.5)	85.9(1.3)	85.8(1.0)	72.9(2.6)	82.2(3.1)
Add whole numbers	1992	52.0(1.2)	49.0(1.6)	54.7(1.7)	54.2(1.4)	43.1(2.9)	45.6(3.8)
	1990	53.6(1.5)	50.0(2.0)	56.9(1.7)	56.4(1.7)	41.4(2.7)	46.8(4.0)
	1986	53.1(1.8)	47.4(2.3)	58.4(2.1)	55.6(2.3)	42.3(2.8)	44.2(4.0)
	1982	46.4(1.5)	42.3(1.5)	50.8(2.2)	50.4(1.6)	28.6(3.4)	33.0(4.3)
Add whole numbers	1992	96.4(0.4)	96.0(0.6)	96.8(0.4)	96.7(0.5)	95.7(1.0)	94.4(1.6)
	1990	94.3(0.7)	93.3(0.8)	95.2(0.9)	94.4(0.7)	92.7(1.5)	94.3(2.4)
	1986	93.5(0.7)	91.5(0.9)	95.4(0.7)	94.3(0.9)	90.0(1.3)	89.0(2.3)
	1982	94.4(0.6)	93.2(0.8)	95.5(0.8)	95.7(0.7)	89.8(1.6)	87.3(2.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Add whole numbers	1992	94.6(0.5)	94.0(1.0)	95.2(0.6)	95.3(0.6)	92.7(1.0)	89.9(1.7)
	1990	90.3(0.9)	88.9(1.2)	91.7(1.1)	91.5(0.9)	83.1(2.4)	89.5(2.7)
	1986	90.7(0.8)	90.4(1.0)	91.0(1.2)	92.3(1.0)	85.2(1.6)	86.8(2.1)
	1982	89.4(1.0)	88.9(1.1)	89.9(1.2)	92.5(0.6)	75.5(3.4)	80.9(3.4)
Add whole numbers	1992	69.1(1.2)	66.1(1.6)	71.8(1.5)	72.7(1.2)	56.4(2.6)	59.1(3.4)
	1990	65.1(1.7)	62.3(2.1)	68.0(1.9)	68.9(1.6)	46.9(5.0)	62.4(4.3)
	1986	56.0(1.7)	54.5(1.9)	57.5(2.1)	59.0(1.8)	46.8(3.1)	43.7(4.8)
	1982	54.7(1.9)	53.2(2.2)	56.1(2.4)	59.5(2.1)	34.3(3.2)	34.6(4.5)
Apply operation of addition	1992	89.5(0.7)	88.7(0.9)	90.3(1.1)	90.6(0.8)	85.2(2.5)	87.4(2.7)
	1990	91.4(0.9)	90.5(1.3)	92.3(1.0)	92.9(0.9)	86.0(2.7)	86.8(2.7)
	1986	89.9(0.7)	85.8(1.0)	93.8(0.9)	90.1(0.8)	90.2(1.5)	87.0(3.7)
	1982	85.1(0.9)	84.4(1.2)	85.9(1.0)	87.0(0.9)	78.8(2.6)	74.7(3.1)
Add whole numbers	1992	63.1(1.2)	61.3(1.6)	64.9(2.1)	65.0(1.3)	53.0(2.5)	56.6(4.5)
	1990	62.9(1.5)	61.1(2.1)	64.6(2.0)	65.0(1.7)	55.5(2.8)	56.8(4.5)
	1986	57.6(1.5)	56.2(2.1)	59.2(1.7)	60.5(1.7)	45.5(3.6)	51.2(6.0)
	1982	65.5(1.4)	64.6(1.9)	66.3(1.7)	68.2(1.5)	48.7(2.9)	64.9(2.8)
	1978	66.2(1.5)	63.7(2.1)	68.6(1.8)	69.1(1.6)	52.9(4.0)	60.5(5.7)
Subtract whole numbers	1992	76.3(1.1)	74.4(1.5)	78.4(1.5)	78.5(1.1)	64.3(2.5)	74.9(3.7)
	1990	76.5(1.4)	73.2(1.5)	79.7(2.3)	78.3(1.4)	69.7(4.0)	68.5(4.0)
	1986	75.5(1.3)	75.8(1.3)	75.0(2.0)	77.8(1.6)	66.1(3.4)	71.5(5.8)
	1982	68.4(1.4)	63.2(2.3)	73.6(1.5)	70.8(1.6)	57.6(3.1)	57.1(6.2)
	1978	65.5(2.1)	62.0(2.6)	69.1(2.1)	68.6(2.4)	46.2(3.8)	65.3(6.1)
Subtract whole numbers	1992	52.9(1.8)	52.4(2.4)	53.5(1.9)	56.1(2.0)	37.0(3.7)	47.1(3.1)
	1990	54.5(1.7)	52.7(2.2)	56.3(2.0)	57.3(1.6)	42.1(4.6)	46.6(4.9)
	1986	54.3(1.9)	51.9(2.2)	57.0(2.4)	58.0(2.2)	38.3(2.8)	45.3(5.6)
	1982	43.3(2.0)	40.7(2.2)	45.9(2.2)	46.1(2.4)	27.2(2.7)	34.5(7.8)
	1978	42.9(2.2)	39.6(2.5)	46.2(2.6)	47.0(2.5)	21.4(3.1)	34.2(3.3)
Subtract whole numbers	1992	57.3(1.3)	55.8(1.6)	59.0(2.0)	61.1(1.4)	41.1(2.8)	49.4(5.5)
	1990	59.2(1.6)	55.8(1.9)	62.6(2.1)	61.9(1.4)	48.7(5.3)	46.8(5.5)
	1986	59.8(1.7)	61.1(1.9)	58.5(2.1)	63.8(1.9)	43.4(2.9)	51.1(7.1)
	1982	48.4(2.1)	44.8(2.2)	52.0(2.6)	50.5(2.5)	36.1(3.1)	41.2(5.6)
	1978	49.4(2.7)	46.8(3.3)	52.0(2.6)	53.2(3.1)	26.7(3.7)	49.3(7.1)
Subtract whole numbers	1992	92.1(0.6)	90.8(0.8)	93.3(0.7)	93.5(0.5)	86.3(1.8)	89.0(1.9)
	1990	90.3(1.0)	87.8(1.3)	92.9(1.1)	92.7(0.7)	78.6(2.8)	87.8(2.4)
	1986	89.4(0.8)	87.3(1.3)	91.5(0.8)	92.5(0.8)	79.5(2.3)	78.8(2.4)
	1982	89.2(0.8)	87.1(1.1)	91.3(1.0)	91.8(0.7)	77.1(2.4)	83.2(3.3)
	1978	84.3(1.1)	83.0(1.4)	85.8(1.5)	87.9(1.0)	69.4(3.2)	73.2(4.6)
Subtract whole numbers	1992	89.6(0.7)	87.8(1.1)	91.2(1.0)	90.9(0.8)	84.0(1.9)	89.3(2.1)
	1990	87.5(1.1)	84.5(1.8)	90.5(1.1)	90.4(1.0)	75.8(3.8)	77.2(3.2)
	1986	86.3(0.9)	84.2(1.2)	88.4(1.3)	89.2(1.0)	75.6(2.3)	78.5(2.8)
	1982	86.3(1.1)	83.9(1.8)	88.8(1.1)	89.2(1.1)	71.2(2.4)	84.2(2.6)
	1978	79.5(1.2)	77.1(1.6)	82.2(1.4)	83.1(0.9)	63.4(3.9)	70.5(2.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 9

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Subtract whole numbers	1992	90.3(0.6)	89.5(1.1)	90.9(0.8)	91.5(0.7)	85.5(1.8)	87.8(2.0)
	1990	87.2(1.0)	84.5(1.4)	89.9(1.3)	89.0(0.9)	78.4(2.9)	82.9(2.7)
	1986	85.3(1.0)	82.4(1.3)	88.0(1.3)	88.7(1.0)	74.7(3.2)	71.3(2.3)
	1982	85.6(1.0)	83.1(1.4)	88.1(1.2)	88.6(0.9)	69.3(2.1)	81.4(2.5)
	1978	79.8(1.2)	77.8(1.4)	82.1(1.6)	83.7(1.0)	60.4(3.2)	74.4(3.4)
Multiply whole numbers	1992	67.8(1.5)	66.8(2.0)	68.8(1.9)	68.7(1.4)	62.1(2.6)	60.0(4.2)
	1990	71.4(1.4)	68.6(1.9)	73.9(1.6)	72.3(1.5)	64.4(2.8)	72.6(4.3)
	1986	64.9(1.7)	61.2(2.3)	68.4(1.6)	66.5(1.7)	62.6(3.8)	47.8(5.0)
	1982	61.0(3.1)	55.5(3.0)	66.5(3.4)	61.9(4.0)	52.9(3.6)	65.7(5.7)
	1978	64.0(1.6)	62.1(1.8)	65.9(2.1)	66.1(1.6)	53.7(3.4)	53.0(8.9)
Multiply whole numbers	1992	10.6(1.2)	10.4(1.1)	10.8(1.8)	11.1(1.3)	4.9(1.7)	10.2(2.9)
	1990	16.4(2.0)	15.0(2.0)	17.8(2.4)	17.1(2.3)	13.2(2.3)	9.4(2.8)
	1986	11.5(1.3)	10.3(1.6)	12.7(1.5)	12.1(1.4)	7.6(1.8)	8.0(2.5)
	1982	13.7(1.9)	12.3(1.9)	15.1(2.1)	14.9(2.2)	4.6(1.3)	15.2(5.8)
	1978	8.2(1.1)	7.1(1.1)	9.3(1.4)	9.0(1.3)	4.4(1.5)	6.4(2.6)
Multiply whole numbers	1992	91.1(0.6)	90.0(0.9)	92.1(0.8)	91.3(0.7)	89.7(1.2)	91.2(1.3)
	1990	91.1(0.8)	88.7(1.2)	93.5(0.9)	92.5(0.8)	84.5(2.5)	88.4(1.7)
	1986	88.8(1.0)	88.0(1.2)	89.6(1.4)	90.9(1.0)	82.2(2.0)	79.8(3.2)
	1982	87.8(0.9)	85.1(1.2)	90.6(1.0)	90.2(0.8)	76.4(2.6)	81.3(3.4)
	1978	88.7(0.9)	87.0(1.2)	90.6(1.2)	91.0(0.7)	77.3(3.0)	83.8(3.2)
Multiply whole numbers	1992	87.2(0.9)	85.3(1.5)	89.0(0.9)	88.4(1.0)	83.3(2.3)	87.3(1.9)
	1990	82.5(1.3)	79.9(1.7)	85.1(1.4)	85.3(1.3)	71.7(2.5)	78.7(3.5)
	1986	82.8(0.9)	81.0(1.6)	84.5(1.1)	85.6(0.9)	71.6(2.6)	78.7(2.8)
	1982	79.9(1.2)	77.7(1.8)	82.0(1.2)	82.7(1.1)	65.9(2.8)	71.4(3.5)
	1978	79.8(1.2)	76.4(1.4)	83.5(1.7)	82.6(1.0)	65.6(3.6)	74.3(5.7)
Apply place value	1992	71.5(1.4)	74.8(1.7)	68.5(1.6)	77.6(1.4)	50.9(3.0)	49.0(4.2)
	1990	71.4(1.5)	73.4(1.6)	69.5(1.8)	78.2(1.6)	46.3(3.4)	57.5(5.3)
	1986	64.8(1.8)	66.4(2.1)	63.2(2.1)	71.2(2.0)	40.9(3.8)	45.7(4.8)
	1982	67.4(2.0)	68.1(2.3)	66.7(2.3)	73.6(1.9)	41.9(3.4)	45.3(5.7)
	1978	62.6(1.7)	65.1(2.1)	60.3(2.0)	68.9(1.6)	33.6(3.8)	41.6(5.3)
Apply place value	1992	49.9(1.5)	51.8(1.6)	47.9(1.8)	55.0(1.5)	32.7(3.1)	30.0(2.8)
	1990	47.9(1.8)	51.3(2.4)	44.6(1.9)	54.8(1.8)	25.7(4.0)	27.0(4.3)
	1986	43.1(2.2)	47.8(2.1)	38.1(3.0)	48.5(2.8)	26.9(3.0)	20.0(5.2)
	1982	56.4(1.6)	57.1(2.0)	55.7(2.0)	62.4(1.7)	31.6(2.5)	35.0(4.2)
	1978	51.5(2.0)	55.6(2.4)	47.8(2.5)	57.4(2.0)	24.2(2.5)	32.0(7.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Understand probability	1992	85.4(0.9)	85.3(1.1)	85.5(1.2)	89.4(1.0)	70.8(2.8)	80.7(2.6)
	1990	81.9(1.0)	83.2(1.5)	80.6(1.5)	86.1(0.9)	68.4(3.6)	78.1(3.1)
	1986	81.7(1.1)	81.3(1.4)	82.0(1.5)	85.3(1.2)	66.7(3.9)	72.8(3.9)
	1982	86.2(1.3)	87.4(1.6)	84.9(1.3)	90.0(1.0)	68.0(4.5)	76.7(6.6)
	1978	83.5(1.3)	83.3(1.6)	83.7(1.6)	87.1(1.3)	63.3(2.9)	80.3(3.2)
Read data from table	1992	95.4(0.4)	95.5(0.9)	95.2(0.8)	96.0(0.4)	92.7(1.7)	93.4(1.7)
	1990	95.3(0.5)	94.9(0.8)	95.9(0.5)	96.1(0.7)	94.2(1.6)	92.0(2.0)
	1986	94.9(0.5)	94.1(0.6)	95.8(0.7)	95.3(0.6)	92.5(1.1)	94.9(1.4)
	1982	92.6(0.5)	91.9(1.1)	93.2(0.8)	93.4(0.5)	85.1(2.1)	97.8(0.9)
	1978	91.8(0.8)	90.5(1.2)	93.1(1.0)	93.0(0.8)	85.8(3.1)	89.8(3.8)
Interpret data in table	1992	83.9(0.9)	83.8(1.3)	83.9(1.1)	87.6(0.9)	75.8(2.4)	69.1(3.8)
	1990	79.5(1.3)	79.1(1.8)	80.0(1.5)	84.3(1.2)	68.2(4.6)	61.1(4.4)
	1986	80.4(1.2)	80.9(1.9)	79.9(1.3)	84.7(1.0)	66.9(3.9)	60.7(3.5)
	1982	76.2(1.6)	74.7(2.5)	77.7(1.9)	79.9(1.5)	59.5(4.4)	65.7(4.7)
	1978	67.4(1.5)	66.4(1.7)	68.5(2.2)	72.6(1.3)	45.3(2.8)	48.5(8.7)
Compute using data in table	1992	92.2(0.5)	91.9(0.8)	92.5(0.7)	93.5(0.6)	89.2(1.7)	89.0(1.7)
	1990	92.3(0.7)	91.4(0.9)	93.2(1.1)	93.0(0.9)	91.0(1.6)	89.6(3.2)
	1986	91.3(0.6)	90.0(1.1)	92.5(1.3)	91.6(0.7)	88.8(2.1)	94.5(1.6)
	1982	92.4(0.9)	92.0(1.1)	92.7(0.9)	94.1(0.9)	83.1(1.9)	89.9(1.6)
	1978	87.0(1.0)	86.1(1.2)	87.9(1.3)	89.5(0.9)	74.5(2.9)	79.7(3.5)
Read data in bar graph	1992	90.3(0.9)	88.9(1.4)	91.7(0.9)	91.7(0.9)	82.9(2.4)	92.6(2.3)
	1990	89.9(0.7)	86.7(1.3)	93.0(0.8)	90.8(0.7)	87.9(2.8)	82.9(3.3)
	1986	89.6(0.7)	89.0(1.0)	90.2(1.4)	90.1(0.8)	87.7(1.6)	86.8(3.0)
	1982	88.0(0.6)	86.5(0.9)	89.4(1.0)	89.5(0.7)	81.8(2.0)	81.3(2.6)
	1978	85.5(0.9)	83.7(1.4)	87.4(1.3)	87.6(0.8)	74.5(1.9)	80.8(5.0)
Interpret data in bar graph	1992	75.4(1.0)	75.1(1.7)	75.8(1.6)	81.2(1.1)	54.8(2.9)	60.8(3.7)
	1990	70.9(1.3)	73.1(1.4)	68.8(2.0)	76.2(1.3)	52.7(4.2)	53.5(6.1)
	1986	69.2(1.7)	71.5(2.2)	67.0(1.9)	73.1(1.7)	54.1(4.2)	55.4(5.3)
	1982	62.4(1.7)	62.6(2.2)	62.1(2.7)	67.6(1.9)	38.6(2.8)	48.9(4.7)
	1978	53.5(1.8)	55.8(2.1)	51.1(1.9)	59.7(1.6)	29.1(1.8)	22.8(5.6)
Compute with data in bar graph	1992	90.9(0.8)	90.3(1.0)	91.4(1.0)	92.8(0.8)	83.0(2.8)	90.2(2.9)
	1990	90.9(0.8)	88.5(1.2)	93.2(0.8)	92.4(0.8)	87.0(2.4)	84.8(2.5)
	1986	88.8(0.8)	86.9(1.2)	90.7(1.1)	91.4(0.8)	82.4(2.7)	71.0(5.9)
	1982	85.7(1.0)	86.0(1.8)	85.3(1.4)	88.5(1.1)	71.4(3.9)	79.5(6.1)
	1978	80.5(1.2)	79.6(1.3)	81.3(1.6)	84.0(1.4)	63.7(4.4)	69.4(6.6)
Find perimeter of rectangle	1992	45.2(1.4)	46.8(1.8)	43.8(2.0)	49.7(1.7)	30.7(2.7)	33.6(3.7)
	1990	43.2(1.3)	45.2(1.7)	41.1(1.7)	46.5(1.5)	31.7(3.2)	32.0(2.4)
	1986	39.0(2.6)	42.3(3.1)	35.8(2.7)	43.2(3.2)	20.7(2.4)	29.6(5.1)
	1982	38.8(2.0)	41.0(3.0)	36.5(1.9)	42.1(2.4)	22.2(3.6)	26.5(4.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find perimeter of rectangle	1992	61.4(1.3)	64.6(1.9)	57.9(1.8)	63.4(1.5)	51.6(2.7)	57.9(5.6)
	1990	54.4(1.8)	59.1(2.0)	50.0(2.3)	56.7(2.0)	41.5(4.0)	52.2(4.5)
	1986	52.6(2.7)	56.3(2.4)	49.0(3.5)	55.3(3.2)	41.6(3.1)	40.1(6.5)
	1982	50.5(1.7)	54.6(1.9)	46.1(2.4)	54.4(1.9)	32.4(4.0)	38.9(3.8)
Use ruler to measure length	1992	58.1(1.3)	62.1(1.6)	53.8(2.0)	67.1(1.4)	21.4(2.6)	45.3(4.6)
	1990	54.9(1.6)	61.9(1.6)	48.2(2.3)	62.5(1.5)	22.4(3.0)	39.6(4.0)
	1986	55.1(2.6)	60.5(2.6)	49.6(3.1)	60.7(2.6)	27.9(3.1)	45.8(6.5)
	1982	61.0(1.7)	66.9(2.1)	55.2(2.2)	66.6(1.8)	34.2(3.9)	46.0(7.4)
Apply triangle inequality	1992	72.1(1.0)	73.6(1.4)	70.7(1.6)	72.8(1.3)	70.8(2.6)	67.8(4.0)
	1990	71.5(1.1)	74.7(1.6)	68.2(1.5)	72.1(1.4)	69.6(3.0)	68.0(3.7)
	1986	69.1(1.7)	70.2(2.7)	68.0(3.6)	70.6(1.9)	61.1(3.5)	68.4(3.8)
	1982	71.7(1.5)	74.0(2.3)	69.4(2.3)	73.1(1.5)	63.3(3.8)	70.9(4.7)
	1978	64.3(1.2)	65.6(1.5)	63.1(1.8)	65.6(1.4)	58.5(3.9)	56.2(6.1)
Identify a sphere	1992	73.8(1.6)	77.5(1.7)	70.1(2.2)	77.8(1.6)	55.4(4.1)	67.6(5.3)
	1990	74.2(1.8)	75.9(2.2)	72.7(1.9)	78.6(1.9)	59.1(4.1)	61.8(4.1)
	1986	73.1(1.5)	74.1(1.8)	72.0(2.0)	76.1(1.6)	59.1(4.7)	65.3(4.7)
	1982	71.3(2.1)	70.9(2.1)	71.6(2.5)	76.1(2.1)	49.1(3.3)	55.8(3.7)
	1978	63.6(2.0)	62.1(2.1)	65.0(2.5)	69.0(2.0)	38.8(3.4)	44.5(6.9)
Identify parallel lines	1992	94.0(0.7)	93.7(1.0)	94.3(0.6)	95.6(0.6)	89.1(2.3)	88.8(2.6)
	1990	93.0(0.7)	92.8(0.7)	93.2(1.0)	94.9(0.7)	86.0(2.0)	90.1(1.8)
	1986	93.4(0.7)	92.0(0.9)	94.8(0.9)	95.1(0.6)	88.5(2.2)	85.8(4.7)
	1982	91.4(0.9)	90.7(1.5)	92.0(0.9)	94.1(1.1)	76.9(2.5)	87.9(1.2)
	1978	89.6(1.0)	91.1(1.1)	88.4(1.3)	92.6(1.0)	73.2(3.4)	84.3(2.6)
Identify perpendicular lines	1992	37.4(1.7)	35.9(2.1)	39.0(2.3)	39.9(1.9)	28.3(2.1)	30.2(4.1)
	1990	35.2(1.7)	34.6(1.7)	35.8(2.3)	38.7(2.0)	21.2(2.6)	25.9(5.5)
	1986	37.9(1.9)	36.3(1.6)	39.5(3.2)	40.2(2.1)	30.0(3.0)	27.1(4.2)
	1982	37.9(1.6)	37.1(2.0)	38.7(2.6)	40.9(1.9)	25.5(2.4)	20.2(4.6)
	1978	33.2(1.9)	32.6(2.1)	33.8(2.4)	35.8(2.2)	23.6(3.2)	18.3(4.0)
Add monomials	1992	29.3(2.2)	26.9(2.8)	31.8(2.2)	31.5(2.6)	17.9(4.4)	28.0(3.4)
	1990	27.5(1.9)	25.4(2.0)	29.6(2.1)	30.5(2.3)	16.4(2.4)	15.7(2.3)
	1986	24.7(3.5)	23.3(2.6)	26.0(4.6)	26.6(4.2)	16.8(2.4)	15.3(2.7)
	1982	27.4(1.3)	24.7(1.8)	30.2(2.4)	30.8(1.6)	10.9(1.6)	14.1(3.6)
	1978	25.1(1.4)	23.8(1.7)	26.5(1.7)	28.1(1.6)	12.2(2.4)	12.8(3.9)
Evaluate algebraic expression	1992	80.9(1.2)	80.0(1.4)	81.7(1.6)	83.9(1.2)	74.4(2.8)	66.9(2.9)
	1990	79.0(1.4)	79.1(1.9)	79.0(1.7)	83.4(1.2)	68.3(3.7)	62.7(4.9)
	1986	80.8(1.2)	79.5(1.5)	82.1(1.7)	83.8(1.3)	67.5(3.5)	75.5(3.1)
	1982	78.8(1.9)	76.7(2.6)	80.8(1.9)	83.4(2.2)	56.5(3.5)	66.6(2.7)
	1978	69.5(1.9)	64.9(2.1)	74.0(2.5)	74.7(1.6)	49.6(3.8)	42.6(5.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Apply transitive property	1992	51.5(1.8)	51.5(2.0)	51.4(2.1)	55.9(1.9)	32.9(3.7)	36.9(5.6)
	1990	49.1(1.5)	51.5(1.8)	46.9(2.0)	52.9(1.7)	34.8(3.1)	40.4(3.7)
	1986	43.3(1.3)	43.9(1.8)	42.7(1.7)	46.2(1.6)	29.1(2.5)	33.8(4.2)
	1982	54.6(1.7)	56.1(1.8)	53.0(2.1)	57.4(1.9)	41.4(3.1)	38.7(4.9)
	1978	57.3(1.4)	59.5(1.8)	54.8(1.9)	60.5(1.6)	41.4(3.6)	48.3(3.1)
Identify number line property	1992	50.6(1.5)	49.2(1.8)	51.9(2.1)	55.0(1.8)	31.7(3.2)	38.8(3.7)
	1990	46.3(1.7)	45.9(1.8)	46.6(2.5)	49.8(1.8)	30.6(4.0)	37.3(5.4)
	1986	45.8(1.3)	46.7(2.0)	44.9(2.0)	48.6(1.5)	34.6(1.9)	35.8(4.6)
	1982	47.6(1.8)	50.3(2.9)	45.1(2.0)	52.1(1.9)	27.8(3.0)	33.0(6.2)
	1978	52.3(1.6)	54.4(1.7)	50.5(2.2)	57.3(1.6)	28.6(3.5)	37.1(6.2)
Write improper fraction	1992	67.2(1.5)	63.5(1.9)	71.2(1.6)	70.8(1.4)	49.2(3.9)	67.1(4.2)
	1990	70.8(1.3)	66.4(1.8)	75.1(1.6)	75.0(1.3)	54.4(5.0)	56.7(3.9)
	1986	69.9(1.9)	66.8(2.1)	73.0(2.4)	73.2(2.2)	55.6(4.1)	55.8(8.8)
	1982	67.3(1.6)	65.0(1.5)	69.7(2.0)	71.3(1.6)	49.8(4.6)	50.7(5.3)
	1978	60.7(2.2)	57.2(2.5)	64.3(2.6)	67.3(2.2)	32.4(4.9)	30.2(1.7)
Find percent greater than 100	1992	52.0(1.5)	55.7(1.8)	48.1(2.1)	56.1(1.6)	38.1(3.8)	40.1(4.5)
	1990	48.4(1.1)	51.2(1.5)	45.6(1.5)	51.6(1.5)	37.6(2.1)	33.0(5.8)
	1986	48.6(1.8)	52.0(2.5)	45.1(2.3)	49.9(1.9)	42.5(3.2)	43.5(3.7)
	1982	51.7(1.7)	53.6(1.8)	49.8(2.6)	52.8(1.8)	48.5(3.1)	43.0(6.3)
	1978	49.2(1.3)	52.5(1.5)	45.8(2.0)	50.9(1.4)	40.4(3.7)	46.0(6.2)
Understand concept of percent	1992	45.1(1.4)	51.3(1.6)	39.4(2.1)	50.1(1.8)	31.1(3.1)	27.9(2.8)
	1990	42.4(1.9)	47.1(2.2)	37.4(2.2)	48.2(2.1)	26.8(3.7)	28.1(3.6)
	1986	41.4(1.6)	46.3(2.2)	36.5(2.4)	46.0(1.9)	22.9(2.0)	28.5(5.0)
	1982	52.8(2.1)	59.6(2.4)	46.2(2.7)	57.9(2.1)	31.7(2.8)	33.1(3.7)
	1978	47.6(1.5)	52.2(1.7)	42.7(1.9)	51.3(1.4)	31.1(2.6)	34.8(4.4)
Convert decimal to percent	1992	31.0(1.4)	29.9(1.6)	32.0(1.8)	32.7(1.5)	25.0(2.6)	19.5(3.4)
	1990	28.4(1.8)	30.0(2.0)	26.7(2.1)	30.3(2.2)	21.8(1.9)	23.5(3.1)
	1986	25.7(2.1)	26.0(1.9)	25.4(2.9)	26.6(2.4)	20.4(2.3)	25.2(6.1)
	1982	31.0(1.7)	32.3(2.0)	29.6(2.4)	31.9(2.1)	22.8(2.5)	37.4(4.5)
	1978	28.6(1.1)	28.6(1.8)	28.6(1.2)	30.2(1.3)	20.0(3.5)	21.6(4.4)
Solve percent problem	1992	48.1(1.9)	53.3(2.1)	42.9(2.5)	51.5(2.1)	32.6(3.8)	37.9(4.6)
	1990	41.6(1.7)	45.0(2.2)	38.4(2.1)	45.7(2.0)	26.4(3.3)	29.5(2.9)
	1986	38.7(1.6)	40.6(2.0)	36.9(2.4)	42.2(2.1)	22.2(1.5)	28.3(4.2)
	1982	44.7(1.8)	46.3(2.3)	43.0(2.5)	48.4(1.4)	31.9(4.8)	29.2(4.2)
	1978	38.9(1.6)	42.1(1.9)	35.7(2.1)	41.9(1.7)	22.9(2.8)	29.2(5.6)
Add integers	1992	58.4(1.6)	60.8(2.1)	55.9(1.7)	64.2(1.8)	37.1(3.6)	39.1(4.3)
	1990	54.4(1.8)	56.0(2.3)	52.9(2.1)	59.2(2.1)	33.0(3.3)	46.4(6.7)
	1986	51.3(1.8)	52.1(2.0)	50.5(2.8)	54.8(1.7)	34.9(3.9)	38.4(5.2)
	1982	45.4(2.4)	48.8(2.6)	41.9(2.7)	49.7(2.6)	22.4(3.0)	38.2(6.1)
	1978	44.0(2.0)	44.7(2.5)	43.3(2.4)	49.6(2.2)	18.4(3.1)	22.7(5.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Solve number sentence	1992	52.3(1.3)	53.3(1.9)	51.2(1.6)	55.9(1.6)	39.2(2.8)	43.6(3.8)
	1990	51.6(1.1)	52.6(1.5)	50.5(1.8)	55.2(1.3)	37.1(3.1)	45.2(4.9)
	1986	49.3(1.9)	49.4(2.1)	49.3(3.0)	51.9(2.1)	35.8(3.8)	45.8(4.7)
	1982	36.3(1.5)	38.7(1.8)	33.9(2.0)	37.7(1.7)	28.9(3.3)	31.3(5.5)
	1978	43.7(1.2)	45.6(1.9)	41.9(1.6)	47.7(1.1)	22.1(3.3)	34.9(4.6)
Estimate weight	1992	33.5(1.0)	33.2(1.3)	33.8(1.4)	34.6(1.3)	27.5(2.3)	30.5(2.7)
	1990	33.3(1.4)	35.0(1.9)	31.4(1.7)	34.3(1.6)	31.3(3.6)	26.4(4.0)
	1986	34.8(1.5)	36.6(2.1)	32.9(1.8)	36.8(1.9)	23.1(1.9)	36.4(3.8)
	1982	32.5(1.3)	32.6(1.8)	32.4(2.4)	34.7(1.5)	19.0(2.6)	35.1(4.9)
Estimate total weight	1992	40.1(1.0)	42.7(1.7)	37.8(1.1)	43.5(1.1)	28.1(2.5)	35.1(2.2)
	1990	38.5(1.2)	39.2(1.3)	37.8(1.5)	42.5(1.4)	27.6(2.8)	28.3(3.4)
	1986	37.1(1.8)	38.5(2.2)	35.7(2.6)	40.5(2.3)	26.1(2.6)	22.7(3.2)
	1982	35.1(1.7)	36.5(2.2)	33.6(2.2)	38.2(1.6)	18.5(2.7)	29.2(3.4)
Estimate cost of pencils	1992	77.9(1.0)	78.0(1.4)	77.8(1.4)	81.1(0.9)	67.0(2.5)	72.1(3.3)
	1990	75.9(1.4)	76.7(1.8)	75.2(1.7)	79.6(1.1)	51.9(6.2)	72.5(2.9)
	1986	74.9(1.3)	76.4(1.4)	73.5(1.7)	77.3(1.5)	63.7(2.9)	69.9(4.2)
	1982	58.8(2.1)	60.6(2.9)	56.8(2.3)	63.0(1.9)	38.1(5.1)	47.2(6.0)
Estimate cost using percent	1992	36.3(1.0)	41.1(1.6)	32.0(1.6)	36.7(1.2)	32.6(2.3)	41.2(4.2)
	1990	35.0(1.2)	37.5(1.8)	32.3(1.4)	37.8(1.2)	27.2(4.2)	25.6(3.7)
	1986	38.0(1.9)	38.6(2.4)	37.4(2.2)	40.2(2.2)	32.1(3.0)	28.3(3.1)
	1982	38.2(1.2)	40.6(2.3)	35.6(1.5)	41.0(1.3)	27.0(5.0)	29.6(5.9)
Estimate difference in length	1992	62.3(1.3)	62.4(1.5)	62.1(1.9)	66.4(1.5)	48.5(2.9)	53.6(3.5)
	1990	61.6(2.0)	62.6(2.2)	60.6(2.7)	65.8(1.9)	47.3(4.5)	51.7(5.3)
	1986	58.8(1.9)	59.4(2.2)	58.3(2.6)	63.1(2.0)	39.6(3.2)	52.3(4.2)
	1982	56.4(1.7)	56.8(2.0)	55.9(2.3)	60.1(2.0)	37.2(2.6)	47.9(6.1)
Use property of transitivity	1992	82.8(1.0)	82.0(1.2)	83.6(1.4)	84.8(1.0)	77.7(2.4)	77.4(2.8)
	1990	84.1(1.2)	83.5(1.5)	84.7(1.5)	86.5(1.0)	75.6(4.5)	80.3(2.8)
	1986	85.9(0.8)	84.8(1.3)	86.9(1.1)	87.2(1.2)	79.6(1.9)	83.2(3.3)
	1982	84.8(1.4)	80.9(2.1)	88.6(1.6)	86.4(1.5)	78.2(4.1)	76.5(4.2)
	1978	83.1(1.1)	81.1(1.5)	84.9(1.2)	85.1(1.1)	74.5(3.0)	75.2(4.7)
Determine age relationship	1992	73.2(1.0)	73.9(1.2)	72.5(1.6)	77.9(1.1)	53.8(2.4)	65.3(3.3)
	1990	74.9(1.0)	76.3(1.2)	73.6(1.7)	78.3(1.3)	64.8(3.1)	62.2(4.0)
	1986	72.1(1.3)	71.4(1.7)	72.8(1.7)	74.7(1.2)	60.5(4.3)	64.1(3.8)
	1982	75.3(1.5)	77.1(1.5)	73.6(2.3)	79.6(1.6)	54.8(4.2)	63.8(4.4)
	1978	73.5(1.1)	73.0(1.4)	74.1(1.4)	77.3(0.9)	56.7(5.3)	61.7(4.0)
Identify valid conclusion	1992	78.4(1.2)	76.0(1.6)	81.0(1.5)	81.5(1.2)	67.7(3.4)	71.3(4.6)
	1990	77.7(1.0)	76.4(1.5)	79.1(1.5)	79.8(1.3)	73.0(3.4)	67.6(2.2)
	1986	75.3(1.4)	73.8(2.2)	76.8(1.5)	76.3(1.6)	72.8(3.5)	65.3(3.2)
	1982	67.6(1.4)	66.0(1.9)	69.2(1.8)	69.4(1.8)	61.9(3.5)	58.0(3.7)
	1978	64.6(1.3)	62.2(1.8)	67.2(1.7)	66.1(1.3)	60.6(3.9)	54.3(3.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify valid conclusion	1992	29.5(1.2)	31.5(1.8)	27.2(1.8)	29.8(1.3)	28.4(3.8)	27.0(5.2)
	1990	28.0(1.3)	30.2(1.6)	25.9(1.6)	28.3(1.3)	25.5(3.7)	28.4(4.6)
	1986	29.8(1.3)	30.8(2.0)	28.9(2.2)	30.3(1.5)	26.0(3.1)	33.3(2.8)
	1982	44.9(1.6)	47.9(2.0)	42.0(2.4)	46.7(1.7)	36.0(2.5)	44.6(3.0)
	1978	50.1(1.6)	53.0(2.0)	46.9(2.2)	53.1(1.6)	39.1(4.0)	32.0(6.9)
Interpret data in table	1992	62.4(1.3)	65.7(1.6)	58.9(2.0)	68.0(1.3)	39.7(3.9)	55.1(3.8)
	1990	61.3(1.3)	64.1(1.5)	58.6(1.9)	66.8(1.5)	39.8(3.8)	50.6(4.3)
	1986	60.8(1.9)	63.4(2.2)	58.2(2.3)	64.5(2.2)	42.5(4.0)	61.2(3.2)
	1982	50.2(2.0)	55.1(2.6)	45.3(2.0)	53.5(2.4)	32.3(4.8)	46.1(4.0)
	1978	56.8(1.6)	63.2(1.7)	50.3(2.3)	60.8(1.7)	34.7(2.8)	52.1(3.9)
Read Circle graph	1992	94.4(0.6)	94.7(1.2)	94.2(0.8)	96.1(0.6)	89.5(1.8)	90.1(2.0)
	1990	92.5(1.0)	91.3(1.5)	93.8(0.9)	96.1(0.6)	80.5(4.3)	85.7(2.6)
	1986	94.8(0.7)	95.1(0.9)	94.5(0.8)	96.4(0.6)	90.0(1.9)	89.1(5.0)
	1982	94.8(0.8)	94.0(0.8)	95.5(1.0)	95.9(0.9)	90.4(1.6)	87.4(2.7)
	1978	93.3(0.8)	91.2(1.2)	95.5(0.8)	95.4(0.7)	83.5(2.4)	87.7(3.0)
Interpret data in circle graph	1992	88.9(0.9)	86.3(1.5)	91.3(1.0)	90.6(0.9)	84.1(3.1)	82.9(2.8)
	1990	86.9(1.2)	85.9(1.7)	88.0(1.2)	89.9(1.2)	77.4(3.9)	82.7(2.4)
	1986	86.2(1.0)	86.2(1.8)	86.1(1.3)	88.5(1.1)	78.2(2.4)	75.7(5.4)
	1982	93.7(0.8)	90.9(1.1)	96.5(0.7)	95.2(0.7)	86.7(2.4)	89.7(2.5)
	1978	90.8(0.8)	89.9(1.2)	91.7(0.9)	93.5(0.7)	78.6(2.7)	80.8(3.2)
Find average	1992	57.5(1.7)	56.9(1.9)	58.0(2.4)	63.1(1.9)	37.6(3.1)	43.7(3.4)
	1990	50.5(2.4)	50.8(2.8)	50.1(2.7)	55.1(2.6)	35.5(5.9)	42.0(5.3)
	1986	48.6(2.0)	49.1(2.6)	48.2(2.5)	53.4(2.5)	31.2(3.7)	31.0(4.0)
	1982	52.7(2.2)	52.3(2.7)	53.1(2.4)	56.6(2.0)	36.6(4.0)	33.6(4.3)
	1978	50.6(1.9)	50.6(2.3)	50.6(2.2)	56.4(2.0)	25.0(4.3)	22.5(4.9)
Solve money problem	1992	56.7(2.1)	53.3(2.2)	60.1(2.6)	62.9(2.4)	26.7(3.5)	50.2(4.0)
	1990	51.5(1.7)	47.1(2.1)	55.7(1.9)	55.4(1.8)	39.4(3.6)	36.4(4.0)
	1986	43.7(1.7)	40.3(2.2)	47.0(2.2)	48.0(2.0)	24.0(2.3)	28.8(4.4)
	1982	46.8(2.0)	44.4(2.4)	49.3(2.5)	51.8(1.8)	24.7(4.5)	31.6(2.0)
	1978	43.5(2.2)	42.8(2.4)	44.1(2.6)	48.6(2.3)	20.5(2.5)	24.8(4.3)
Identify algebraic identity	1992	47.2(1.7)	42.3(1.9)	51.8(2.2)	51.7(1.7)	35.0(3.0)	32.7(4.3)
	1990	41.6(2.2)	39.3(2.7)	44.0(2.3)	46.3(2.5)	27.2(4.9)	26.8(4.4)
	1986	37.6(2.8)	36.4(2.8)	38.8(3.3)	41.2(3.2)	22.8(2.6)	25.9(3.9)
	1982	41.5(1.7)	38.2(2.4)	44.8(2.2)	44.8(2.0)	27.7(3.5)	23.7(3.4)
	1978	35.7(1.8)	32.3(2.2)	39.3(1.9)	39.8(1.9)	19.8(1.9)	16.5(4.9)
Identify unit of length	1992	95.1(0.7)	94.8(1.1)	95.3(0.7)	96.2(0.6)	91.1(2.4)	92.8(1.8)
	1990	94.0(0.6)	93.7(0.8)	94.2(0.9)	94.9(0.6)	89.6(2.4)	93.5(2.4)
	1986	91.9(1.1)	92.5(1.3)	91.4(1.1)	93.5(1.3)	86.4(2.3)	84.5(4.2)
	1982	87.5(1.5)	87.7(1.6)	87.4(1.8)	89.9(1.4)	74.5(3.1)	84.9(2.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify unit of weight	1992	71.9(2.0)	73.2(2.6)	70.5(1.8)	75.4(1.9)	59.4(5.0)	61.6(5.2)
	1990	68.9(1.6)	72.3(1.7)	65.7(2.3)	72.0(2.0)	55.8(2.9)	64.8(3.9)
	1986	66.8(1.7)	70.9(1.8)	62.7(2.4)	69.5(1.9)	58.4(4.8)	51.5(4.6)
	1982	70.7(1.6)	73.7(1.8)	67.5(2.5)	75.2(1.9)	46.5(2.6)	64.4(3.0)
Convert metric units	1992	44.0(2.0)	46.4(2.5)	41.4(2.1)	47.2(2.3)	33.1(3.1)	27.7(4.0)
	1990	45.2(1.5)	46.0(1.8)	44.5(1.9)	49.2(1.8)	32.1(2.5)	32.6(4.1)
	1986	46.3(4.0)	46.7(4.3)	45.9(4.1)	48.5(5.0)	35.3(3.3)	41.3(4.1)
	1982	49.5(1.4)	52.4(2.1)	46.7(1.3)	49.5(1.7)	50.4(6.6)	47.0(6.7)
Convert metric units	1992	44.8(1.5)	46.1(1.8)	43.6(2.2)	46.0(1.8)	40.3(3.5)	38.0(6.3)
	1990	48.8(1.9)	48.5(2.2)	49.1(2.3)	50.7(2.1)	43.7(3.3)	39.2(4.5)
	1986	50.1(2.0)	50.4(2.3)	49.7(2.7)	51.6(2.4)	45.2(3.2)	41.6(5.2)
	1982	37.9(2.3)	39.6(3.2)	36.3(2.2)	38.8(2.3)	36.5(6.0)	27.0(5.7)
Identify greatest metric unit	1992	79.4(1.5)	82.8(1.6)	76.0(1.9)	81.7(1.6)	66.8(3.7)	78.3(3.4)
	1990	74.9(1.7)	77.9(2.0)	72.1(1.9)	78.6(1.9)	59.8(3.8)	66.5(5.7)
	1986	71.7(1.6)	77.0(1.9)	66.4(2.2)	75.1(2.1)	60.9(3.9)	52.1(5.4)
	1982	73.7(1.9)	76.8(2.4)	70.6(2.1)	78.2(2.1)	50.6(4.3)	70.6(4.7)
	1978	63.5(1.5)	71.0(2.1)	55.2(1.8)	67.3(1.5)	46.4(3.3)	51.1(4.7)
Estimate height of door	1992	81.9(0.9)	88.0(1.3)	75.4(1.5)	86.4(0.9)	65.1(3.1)	73.6(3.3)
	1990	81.0(1.1)	88.0(1.3)	74.4(1.5)	86.5(1.1)	62.4(3.9)	64.7(4.5)
	1986	81.3(1.6)	88.0(1.4)	74.6(2.5)	85.6(2.2)	62.5(2.7)	75.4(2.4)
	1982	76.9(1.5)	82.3(1.9)	71.7(1.9)	80.2(1.7)	64.5(2.9)	61.5(5.5)
	1978	78.8(1.3)	83.2(1.3)	74.5(1.9)	83.8(1.0)	53.2(4.5)	69.4(2.9)
Read length using ruler	1992	84.4(1.0)	85.6(1.1)	83.0(1.6)	88.4(1.1)	69.5(2.8)	74.9(3.4)
	1990	82.9(0.9)	83.7(1.1)	82.1(1.3)	86.5(0.8)	70.4(4.4)	72.6(3.0)
	1986	81.0(1.1)	81.4(1.3)	80.5(1.5)	83.4(1.2)	67.9(3.0)	79.0(3.2)
	1982	83.8(1.4)	87.4(1.9)	80.1(2.0)	87.1(1.2)	69.5(4.5)	72.0(2.6)
Find area of rectangle	1992	55.9(1.7)	54.0(2.4)	57.9(1.9)	59.5(2.0)	41.3(3.4)	46.9(4.8)
	1990	53.6(1.9)	52.3(2.3)	54.8(2.2)	56.3(2.1)	46.0(3.1)	39.1(5.0)
	1986	51.6(1.9)	50.2(2.5)	53.0(1.9)	53.9(2.2)	44.2(3.7)	34.3(6.1)
	1982	48.4(2.2)	47.2(2.8)	49.5(2.5)	53.1(2.6)	24.4(3.7)	39.9(5.7)
	1978	51.4(2.0)	49.6(2.3)	53.1(2.1)	55.2(2.2)	32.4(3.8)	37.3(4.5)
Find area of rectangle	1992	67.7(1.4)	65.3(1.7)	70.0(1.9)	72.5(1.6)	54.2(3.4)	48.3(3.4)
	1990	62.0(2.3)	60.5(2.8)	63.7(2.4)	66.5(2.5)	47.9(4.1)	54.7(3.9)
	1986	63.4(1.7)	64.5(1.8)	62.4(2.6)	65.6(2.1)	52.6(3.3)	58.1(4.1)
	1982	64.0(2.2)	66.3(2.1)	61.8(2.9)	68.0(2.5)	45.1(3.4)	50.2(4.3)
	1978	70.5(1.6)	70.6(1.6)	70.4(2.2)	73.7(1.5)	52.8(4.1)	62.2(5.2)
Find area of square	1992	12.0(0.9)	12.6(1.1)	11.5(1.2)	12.7(1.2)	8.6(2.8)	8.6(2.0)
	1990	12.5(1.4)	13.0(1.6)	12.1(1.6)	13.9(1.8)	5.9(2.7)	8.4(1.6)
	1986	13.0(1.5)	15.8(1.6)	10.2(1.6)	14.4(1.7)	5.3(1.6)	7.4(2.4)
	1982	17.7(1.9)	20.2(2.2)	15.3(2.3)	20.5(2.1)	4.3(1.3)	3.4(2.6)
	1978	12.1(1.4)	12.8(1.6)	11.4(1.5)	14.4(1.6)	3.1(1.2)	1.4(0.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify parallelograms	1992	70.8(1.2)	68.0(1.8)	73.5(1.4)	75.4(1.2)	52.9(3.0)	56.9(3.4)
	1990	67.2(1.3)	66.4(1.9)	67.9(1.9)	69.3(1.6)	58.1(3.7)	61.9(4.2)
	1986	67.5(2.1)	69.3(2.3)	65.8(2.2)	70.5(2.8)	51.3(2.8)	62.0(4.5)
	1982	72.3(2.0)	71.8(2.3)	72.9(2.6)	75.6(2.0)	59.5(4.2)	59.4(9.0)
	1978	66.4(1.4)	65.5(1.6)	67.3(1.9)	68.2(1.5)	56.9(3.8)	58.3(5.2)
Apply vertical angles	1992	81.1(1.0)	82.2(1.3)	80.1(1.6)	82.7(1.2)	73.6(2.6)	80.5(3.4)
	1990	81.1(1.5)	81.3(1.7)	80.9(2.0)	84.4(1.3)	71.3(4.5)	72.3(2.8)
	1986	80.4(1.8)	78.2(2.6)	82.7(1.8)	81.6(2.1)	76.6(2.3)	76.2(2.9)
	1982	75.0(1.3)	74.6(1.7)	75.4(1.6)	77.5(1.5)	63.4(2.6)	71.2(3.0)
	1978	72.1(1.3)	71.4(1.8)	73.0(1.6)	74.0(1.4)	60.7(4.9)	69.7(4.7)
Apply supplementary angles	1992	10.7(1.0)	12.7(1.4)	8.9(0.9)	11.8(1.4)	6.8(1.5)	4.2(1.3)
	1990	10.6(1.2)	12.8(1.7)	8.4(1.1)	12.1(1.6)	6.7(1.3)	2.3(0.6)
	1986	8.9(1.1)	10.9(1.4)	6.9(1.3)	9.7(1.2)	4.3(1.9)	6.8(2.5)
	1982	12.8(1.6)	16.2(1.8)	9.4(1.6)	13.1(1.7)	12.6(4.0)	9.0(3.2)
	1978	10.3(1.2)	11.7(1.2)	8.9(1.4)	12.1(1.4)	1.4(0.8)	3.5(1.2)
Identify greatest number	1992	58.4(1.8)	62.3(2.3)	54.2(2.3)	64.6(1.7)	32.7(4.2)	47.9(4.6)
	1990	58.0(1.8)	59.9(2.3)	56.2(1.9)	63.3(2.1)	36.0(5.8)	45.2(3.7)
	1986	53.4(1.5)	56.2(1.7)	50.6(2.0)	58.9(1.6)	31.2(2.5)	34.4(5.5)
	1982	54.7(1.8)	56.0(2.5)	53.3(2.2)	58.5(1.5)	37.3(6.2)	38.9(5.8)
Change decimal to percent	1992	63.1(1.4)	63.3(2.2)	63.0(1.9)	65.8(1.6)	50.5(2.9)	62.8(5.1)
	1990	63.3(1.5)	62.4(1.7)	64.2(1.7)	65.4(1.6)	48.5(3.3)	68.8(3.9)
	1986	65.2(1.8)	64.5(2.1)	65.9(2.3)	66.7(1.9)	55.1(3.6)	68.6(3.4)
	1982	68.4(1.4)	65.1(1.8)	71.7(1.7)	69.4(1.5)	61.3(4.5)	68.2(5.1)
Write addition sentence	1992	29.3(1.3)	28.9(1.5)	29.7(1.7)	32.4(1.6)	18.5(2.4)	18.6(3.3)
	1990	28.9(1.4)	29.6(1.6)	28.2(1.6)	31.3(1.6)	18.5(2.8)	22.1(3.4)
	1986	31.8(1.7)	30.2(1.9)	33.4(1.9)	34.1(1.8)	19.6(3.9)	27.3(4.5)
	1982	46.5(2.5)	46.3(2.9)	46.6(2.9)	49.8(2.5)	30.1(6.8)	31.6(7.1)
	1978	48.2(1.5)	46.4(1.8)	50.2(2.3)	53.4(1.5)	25.4(6.0)	26.5(4.0)
Find common factor	1992	84.4(1.1)	84.2(1.8)	84.5(1.6)	86.4(1.2)	75.0(2.8)	85.8(2.4)
	1990	83.8(1.3)	81.1(1.7)	86.4(1.6)	86.5(1.2)	77.9(4.0)	71.6(5.4)
	1986	84.3(1.1)	84.1(1.3)	84.6(1.5)	85.4(1.2)	82.8(2.0)	77.2(3.0)
	1982	79.5(1.3)	78.3(1.6)	80.6(1.5)	81.1(1.4)	75.5(2.8)	68.1(4.2)
	1978	72.5(1.4)	72.9(1.7)	72.2(1.8)	75.3(1.5)	61.4(2.7)	62.9(4.6)
Add whole numbers	1992	97.1(0.4)	97.6(0.5)	96.7(0.6)	97.3(0.4)	96.1(1.2)	96.7(1.2)
	1990	97.1(0.3)	97.1(0.6)	97.1(0.4)	97.2(0.3)	97.1(1.4)	96.3(1.2)
	1986	96.2(0.5)	96.1(0.5)	96.3(0.7)	96.6(0.6)	94.0(1.8)	96.2(0.8)
	1982	96.3(0.5)	95.9(0.7)	96.6(0.5)	96.2(0.6)	95.9(1.0)	97.1(1.4)
Add whole numbers	1992	95.5(0.5)	95.3(0.8)	95.8(0.5)	95.9(0.6)	93.7(1.3)	94.7(2.1)
	1990	96.6(0.4)	96.1(0.8)	97.0(0.5)	96.8(0.3)	96.0(1.7)	94.4(1.8)
	1986	95.3(0.6)	94.5(0.8)	96.1(0.9)	95.4(0.7)	94.4(1.2)	96.3(1.4)
	1982	96.4(0.5)	95.2(0.8)	97.7(0.4)	97.7(0.4)	89.7(1.3)	94.2(1.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Add whole numbers	1992	79.3(1.0)	78.9(1.4)	79.8(1.2)	80.5(1.2)	74.6(2.9)	77.3(2.7)
	1990	81.6(0.8)	79.1(1.4)	84.0(1.1)	82.4(0.9)	77.1(2.9)	79.1(3.6)
	1986	81.3(1.6)	80.1(2.0)	82.5(1.8)	82.0(1.7)	77.6(3.3)	78.4(4.1)
	1982	85.7(1.0)	83.7(1.3)	87.8(1.3)	87.1(1.1)	78.2(2.2)	82.6(2.5)
Add whole numbers	1992	98.1(0.4)	97.5(0.5)	98.7(0.4)	98.1(0.5)	98.9(0.5)	97.9(1.0)
	1990	98.1(0.2)	97.8(0.4)	98.3(0.4)	98.0(0.3)	98.2(0.8)	98.4(0.8)
	1986	97.8(0.4)	97.5(0.5)	98.0(0.6)	97.7(0.5)	98.1(0.6)	97.2(1.2)
	1982	97.1(0.5)	96.7(0.8)	97.5(0.7)	97.6(0.4)	94.1(1.7)	96.7(2.4)
Add whole numbers	1992	97.7(0.4)	97.1(0.7)	98.3(0.5)	97.8(0.5)	96.7(1.3)	100.0(0.0)
	1990	98.0(0.4)	97.5(0.6)	98.4(0.4)	98.3(0.4)	97.2(1.0)	96.2(1.4)
	1986	97.6(0.3)	96.9(0.8)	98.2(0.6)	97.6(0.4)	97.6(0.8)	95.9(1.6)
	1982	97.9(0.4)	97.7(0.6)	98.1(0.5)	98.2(0.3)	96.1(1.5)	97.5(1.4)
Add whole numbers	1992	91.9(0.7)	89.9(1.2)	94.0(0.8)	92.3(0.8)	89.4(2.3)	93.3(2.6)
	1990	92.5(0.7)	90.1(1.0)	94.8(0.8)	93.5(0.6)	89.5(2.2)	87.1(3.5)
	1986	89.6(1.0)	87.2(1.9)	92.0(0.8)	91.1(1.2)	92.3(1.2)	87.0(3.3)
	1982	87.9(1.6)	83.9(2.4)	92.1(1.3)	91.1(1.0)	70.9(6.0)	87.5(3.0)
Apply operation of addition	1992	95.4(0.6)	95.5(0.7)	95.3(0.9)	97.3(0.5)	89.5(2.3)	92.1(2.1)
	1990	96.0(0.4)	95.2(0.7)	96.7(0.5)	96.3(0.4)	95.5(1.3)	94.1(1.4)
	1986	96.5(0.5)	95.9(0.7)	97.1(0.7)	96.8(0.7)	96.2(0.9)	93.4(1.7)
	1982	97.6(0.3)	97.8(0.4)	97.5(0.6)	97.9(0.4)	97.0(1.2)	96.7(1.4)
Subtract whole numbers	1992	94.3(0.7)	93.9(1.1)	94.8(0.7)	95.2(0.7)	88.9(2.1)	96.9(1.4)
	1990	94.9(0.5)	93.1(1.0)	96.7(0.6)	95.3(0.5)	93.7(1.8)	90.9(2.1)
	1986	94.7(0.5)	93.5(1.0)	95.9(0.4)	95.2(0.7)	93.5(1.9)	91.0(2.5)
	1982	95.4(0.5)	94.6(0.9)	96.1(0.7)	96.8(0.5)	87.0(2.3)	95.3(1.2)
	1978	92.1(0.7)	91.5(0.9)	92.6(1.0)	94.2(0.7)	79.9(1.8)	92.0(1.8)
Subtract whole numbers	1992	82.5(1.1)	81.0(1.6)	84.1(1.0)	85.4(0.8)	69.3(4.0)	81.5(3.0)
	1990	81.7(1.1)	80.0(1.6)	83.4(1.5)	84.5(1.3)	68.7(2.9)	79.5(3.8)
	1986	82.8(1.1)	80.8(1.2)	84.7(1.9)	84.0(1.1)	75.9(3.4)	79.5(3.9)
	1982	86.3(1.2)	85.1(1.6)	87.4(2.0)	89.5(1.3)	70.8(3.2)	77.8(3.6)
	1978	80.6(1.2)	80.4(1.4)	80.8(1.6)	83.8(1.3)	63.0(3.5)	77.3(2.7)
Subtract whole numbers	1992	87.3(0.8)	86.6(1.1)	87.9(1.3)	89.6(0.8)	76.1(2.5)	86.1(2.6)
	1990	88.2(0.9)	87.1(1.3)	89.3(1.4)	89.7(0.9)	81.3(3.3)	85.2(2.3)
	1986	87.8(1.6)	86.1(1.7)	89.5(2.1)	89.7(1.7)	79.2(2.6)	83.7(2.2)
	1982	88.0(1.1)	85.9(1.5)	90.1(1.3)	90.3(1.2)	74.0(3.2)	91.1(2.2)
	1978	84.7(0.9)	83.7(1.2)	85.7(1.6)	87.6(0.9)	70.9(2.9)	76.6(3.3)
Subtract whole numbers	1992	95.4(0.6)	95.3(0.7)	95.4(1.0)	96.3(0.6)	91.2(1.7)	94.7(1.7)
	1990	95.1(0.6)	94.7(0.7)	95.6(0.8)	96.3(0.5)	92.3(2.5)	90.5(1.4)
	1986	95.4(0.6)	95.5(0.6)	95.3(1.1)	96.0(0.7)	91.7(1.4)	96.2(1.4)
	1982	96.2(0.7)	95.3(0.9)	97.0(0.7)	96.9(0.7)	92.3(1.5)	94.9(2.3)
	1978	95.8(0.6)	94.8(0.9)	96.8(0.6)	96.9(0.7)	89.4(1.3)	95.8(1.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Subtract whole numbers	1992	95.5(0.5)	94.5(1.1)	96.4(0.8)	96.2(0.6)	92.7(1.6)	95.1(1.8)
	1990	95.7(0.6)	94.8(0.7)	96.7(0.8)	96.2(0.5)	95.3(1.5)	91.2(1.7)
	1986	96.8(0.6)	96.5(0.7)	97.0(0.7)	97.4(0.6)	93.3(1.3)	96.0(1.9)
	1982	96.1(0.6)	94.5(0.9)	97.8(0.7)	96.2(0.7)	94.7(1.3)	97.3(2.0)
	1978	94.9(0.4)	93.3(0.8)	96.6(0.6)	95.8(0.5)	89.5(1.7)	94.3(1.7)
Subtract whole numbers	1992	92.3(1.0)	91.3(1.1)	93.2(1.1)	93.8(1.0)	86.3(2.8)	91.7(1.6)
	1990	91.9(0.9)	91.2(1.3)	92.5(0.9)	93.1(0.8)	87.2(2.8)	89.4(2.5)
	1986	92.9(0.8)	92.3(1.0)	93.6(1.1)	94.3(0.9)	86.9(1.5)	90.2(2.6)
	1982	93.7(0.8)	93.6(1.2)	93.9(1.1)	94.8(0.7)	86.5(2.6)	95.3(2.1)
	1978	91.5(0.7)	90.1(1.0)	92.9(0.8)	93.8(0.6)	80.6(2.5)	85.4(2.5)
Find percent given numbers	1992	55.6(1.5)	62.1(1.6)	49.6(2.3)	60.3(1.6)	39.8(3.7)	46.9(4.5)
	1990	49.0(1.9)	56.7(2.2)	40.8(2.3)	54.5(2.0)	29.4(3.4)	42.4(3.3)
	1986	47.8(1.8)	55.4(2.6)	40.2(2.4)	53.1(2.0)	23.7(1.9)	37.3(5.1)
	1982	50.8(1.8)	55.6(2.1)	45.6(2.0)	56.1(1.6)	25.8(3.1)	40.0(3.1)
Find percent of number	1992	36.6(1.5)	42.4(2.1)	31.3(1.8)	40.1(1.7)	26.2(2.2)	27.0(4.3)
	1990	35.7(1.5)	39.3(1.9)	31.9(1.6)	38.8(1.8)	25.4(2.6)	27.2(3.5)
	1986	33.1(2.2)	36.2(2.6)	30.1(2.1)	35.1(2.6)	25.5(3.6)	24.4(3.8)
	1982	32.8(1.3)	36.1(1.6)	29.4(2.2)	34.0(1.6)	26.0(3.6)	29.2(3.1)
Find percent greater than 100	1992	34.3(1.2)	39.8(1.4)	29.2(1.7)	37.6(1.4)	25.2(3.4)	20.7(2.4)
	1990	31.9(1.9)	37.0(2.4)	26.5(2.0)	35.1(2.2)	22.7(3.0)	22.0(3.6)
	1986	30.3(1.4)	36.4(1.8)	24.2(2.3)	32.8(1.7)	19.6(2.2)	21.6(4.7)
	1982	29.0(1.7)	33.4(2.0)	24.3(2.1)	31.4(1.8)	17.0(3.4)	22.3(3.3)
Find percent given numbers	1992	29.0(1.5)	33.0(1.9)	24.7(1.8)	32.5(1.7)	16.9(1.8)	19.3(3.4)
	1990	24.4(1.2)	28.6(1.5)	20.4(1.4)	27.5(1.3)	11.4(2.2)	18.9(4.4)
	1986	25.6(1.6)	28.6(1.8)	22.5(3.9)	27.7(2.0)	17.3(2.4)	17.2(3.0)
	1982	22.6(1.2)	26.7(1.8)	18.2(1.6)	24.1(1.4)	15.3(3.3)	18.0(2.1)
Find percent given numbers	1992	49.0(1.8)	53.8(2.0)	44.1(2.3)	54.4(1.9)	25.3(3.4)	35.3(4.9)
	1990	46.0(1.7)	50.9(1.6)	41.3(2.2)	52.1(1.7)	23.4(3.6)	33.3(5.0)
	1986	38.9(1.8)	42.7(2.2)	35.1(3.0)	43.2(2.1)	16.8(2.7)	28.4(3.2)
	1982	41.2(2.3)	46.1(3.3)	36.0(2.3)	46.0(1.9)	20.9(4.4)	26.0(3.6)
Find percent of number	1992	41.0(1.4)	42.9(1.9)	39.1(1.8)	44.1(1.7)	25.2(3.1)	29.5(4.7)
	1990	34.5(1.4)	38.1(1.6)	31.0(1.8)	37.0(1.5)	21.1(2.8)	27.8(3.5)
	1986	33.4(1.1)	37.9(1.7)	29.0(1.5)	34.8(1.4)	24.7(2.4)	30.9(4.2)
	1982	32.8(1.4)	32.5(2.0)	33.2(1.6)	34.7(1.6)	24.7(4.0)	21.2(5.1)
Find percent greater than 100	1992	34.6(1.5)	36.7(1.8)	32.5(1.9)	37.2(1.6)	19.3(2.8)	28.1(4.2)
	1990	29.1(1.3)	33.3(1.7)	25.0(1.7)	31.4(1.6)	19.0(3.0)	23.7(3.0)
	1986	27.7(1.0)	30.1(1.6)	25.5(1.8)	29.0(1.4)	19.2(1.9)	21.7(3.7)
	1982	26.5(1.4)	29.4(2.1)	23.5(1.7)	28.1(1.6)	18.9(3.1)	22.0(2.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find percent given numbers	1992	32.5(1.4)	35.0(1.7)	30.0(2.0)	34.0(1.6)	24.1(3.0)	27.3(4.5)
	1990	24.9(1.2)	26.6(1.7)	23.3(1.2)	26.3(1.3)	17.0(2.9)	20.6(3.4)
	1986	24.0(2.0)	25.1(1.5)	23.0(3.0)	24.8(2.5)	17.0(2.4)	23.4(2.8)
	1982	24.0(1.3)	24.9(2.2)	23.1(1.6)	25.6(1.5)	16.0(3.3)	13.1(2.1)
Find number given percent	1992	31.8(1.5)	30.8(1.5)	32.7(2.1)	33.6(1.8)	23.1(2.7)	24.3(3.0)
	1990	26.2(1.2)	26.2(1.4)	26.1(1.7)	27.7(1.4)	17.5(2.1)	23.6(2.8)
	1986	24.6(1.3)	24.8(2.0)	24.5(1.8)	25.0(1.6)	20.8(2.4)	25.3(3.3)
	1982	20.8(1.0)	20.0(1.3)	21.6(1.9)	21.5(1.1)	17.9(1.8)	19.2(5.2)
Subtract decimals	1992	85.4(1.0)	84.2(1.5)	86.6(1.1)	87.7(1.1)	74.9(3.8)	80.4(2.8)
	1990	86.3(0.8)	86.2(1.3)	86.4(1.1)	88.4(0.7)	79.6(3.0)	82.8(4.0)
	1986	82.6(0.9)	82.6(1.5)	82.7(1.7)	85.3(1.1)	69.9(3.8)	77.9(2.8)
	1982	77.0(2.1)	73.3(3.8)	80.9(1.5)	81.0(2.1)	54.4(***)	75.1(3.9)
	1978	80.1(1.3)	80.0(1.6)	80.3(1.5)	83.6(1.2)	61.8(4.3)	74.0(4.2)
Divide decimals	1992	61.0(2.0)	55.7(2.2)	66.2(2.4)	65.6(2.1)	37.6(4.0)	55.5(4.3)
	1990	56.9(1.3)	52.0(1.7)	61.7(1.8)	60.4(1.5)	45.1(3.7)	45.0(3.6)
	1986	52.4(2.2)	47.9(1.9)	56.9(3.3)	58.1(2.6)	28.5(2.9)	37.2(4.1)
	1982	44.1(1.9)	39.9(2.6)	48.5(2.3)	49.7(2.0)	20.5(4.5)	24.5(3.9)
	1978	54.5(1.9)	50.0(2.1)	58.9(2.3)	59.2(1.8)	28.6(3.8)	46.6(5.8)
Add decimals	1992	80.5(1.4)	77.6(1.9)	83.4(1.6)	84.1(1.4)	62.2(3.5)	77.6(4.6)
	1990	79.5(1.0)	73.3(1.3)	85.3(1.3)	82.2(1.1)	67.4(3.9)	74.6(3.3)
	1986	74.1(1.4)	69.1(2.0)	79.0(2.0)	77.8(1.6)	55.6(3.2)	66.1(3.3)
	1982	72.5(2.1)	67.2(3.2)	78.2(2.1)	77.8(1.7)	48.8(6.4)	59.7(5.1)
	1978	76.8(1.7)	72.8(2.1)	80.7(1.8)	79.8(1.8)	59.8(4.0)	74.5(3.4)
Divide decimals	1992	63.6(1.9)	60.3(2.3)	66.8(2.2)	67.1(1.9)	44.3(4.3)	61.3(4.6)
	1990	61.8(1.3)	55.9(1.4)	67.5(1.8)	64.9(1.5)	50.6(3.7)	49.7(3.6)
	1986	58.0(2.2)	53.3(2.4)	62.7(2.4)	63.2(2.7)	34.4(3.9)	48.8(4.8)
	1982	58.0(1.7)	50.0(2.0)	66.4(2.3)	61.6(1.7)	39.3(3.9)	56.8(7.3)
	1978	64.0(1.8)	58.5(2.4)	69.4(2.0)	67.1(1.8)	44.5(3.8)	65.2(4.1)
Subtract decimals	1992	56.2(1.9)	50.9(2.3)	61.6(2.1)	59.0(2.1)	46.6(4.0)	41.8(4.6)
	1990	57.4(1.8)	49.8(1.8)	64.8(2.4)	59.7(2.1)	50.4(4.0)	48.5(4.0)
	1986	51.3(3.0)	45.7(3.0)	56.9(3.3)	55.2(3.7)	34.1(3.9)	40.4(5.8)
	1982	40.1(1.6)	30.9(1.6)	49.7(2.3)	43.6(1.5)	23.1(3.9)	32.4(5.5)
	1978	43.9(1.6)	38.1(2.2)	49.6(2.1)	47.2(1.5)	28.5(3.5)	32.6(3.7)
Divide decimals	1992	42.8(1.7)	39.8(1.8)	45.8(2.4)	44.7(2.0)	32.9(3.8)	36.3(3.6)
	1990	43.4(1.7)	38.3(2.0)	48.3(2.1)	46.1(2.1)	33.5(2.5)	30.5(3.6)
	1986	37.1(2.5)	32.4(3.1)	41.6(2.3)	40.3(2.9)	24.1(3.7)	26.9(4.3)
	1982	29.9(1.4)	21.2(1.8)	39.2(1.8)	31.6(1.5)	21.8(4.9)	25.2(2.8)
	1978	41.8(1.8)	36.0(1.9)	47.4(2.3)	45.0(2.0)	26.0(4.5)	32.2(2.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Estimate total cost	1992	24.7(1.0)	28.5(1.5)	21.3(1.2)	26.9(1.3)	18.9(2.4)	18.8(2.8)
	1990	22.9(1.3)	25.1(1.8)	20.5(1.5)	24.4(1.5)	20.3(2.8)	15.0(2.7)
	1986	23.6(1.4)	27.1(2.5)	20.1(1.5)	25.0(1.8)	15.1(1.6)	24.3(2.4)
	1982	19.3(1.2)	20.5(1.6)	18.1(1.6)	21.3(1.5)	11.6(2.0)	9.4(3.9)
Identify even number	1992	96.7(0.5)	96.9(0.7)	96.5(0.6)	98.0(0.5)	93.5(1.6)	89.6(2.1)
	1990	96.2(0.4)	95.7(0.6)	96.6(0.6)	97.1(0.3)	93.8(2.0)	89.9(1.6)
	1986	95.3(0.8)	94.6(0.9)	96.0(1.0)	96.5(0.9)	91.0(1.4)	90.7(3.3)
	1982	95.9(0.6)	95.9(0.7)	95.9(0.9)	97.4(0.6)	90.7(2.0)	87.0(5.4)
	1978	92.9(0.8)	93.0(1.0)	92.8(1.0)	95.4(0.6)	81.8(2.1)	83.5(2.9)
Identify even number property	1992	52.0(1.4)	52.7(1.7)	51.4(2.2)	55.2(1.7)	43.2(2.4)	39.2(3.3)
	1990	49.2(1.7)	51.2(2.3)	47.1(2.0)	53.3(2.1)	35.8(3.2)	38.8(3.2)
	1986	48.5(1.8)	51.7(2.4)	45.3(1.6)	51.0(2.1)	35.6(3.9)	44.0(2.4)
	1982	58.4(1.8)	58.2(2.0)	58.5(2.1)	60.9(2.1)	45.2(2.8)	53.8(6.8)
	1978	54.6(1.6)	52.6(2.1)	56.5(2.1)	58.3(1.8)	37.8(3.0)	40.7(3.5)
Identify even number property	1992	72.6(1.6)	71.6(1.7)	73.6(2.1)	76.2(1.3)	58.4(4.6)	64.6(3.7)
	1990	72.0(1.5)	70.0(1.6)	73.9(2.0)	76.8(1.4)	54.8(4.8)	61.8(3.6)
	1986	70.1(1.1)	68.8(1.7)	71.5(2.2)	72.9(1.4)	59.0(4.2)	60.8(3.8)
	1982	76.8(1.4)	75.1(2.1)	78.5(1.8)	80.8(1.2)	60.6(4.0)	61.5(4.9)
	1978	70.9(1.6)	68.4(2.1)	73.4(1.8)	75.7(1.5)	48.4(3.7)	55.8(4.2)
Understand percent less than 1	1992	25.0(1.3)	26.5(1.6)	23.4(1.7)	26.9(1.6)	16.7(2.3)	18.9(3.5)
	1990	23.3(1.1)	25.9(1.4)	20.8(1.4)	24.3(1.3)	20.5(2.3)	17.1(2.2)
	1986	22.5(1.4)	22.4(1.3)	22.6(2.0)	24.1(1.7)	13.5(2.2)	21.2(2.8)
	1982	17.1(1.1)	16.7(1.7)	17.4(1.9)	17.6(1.3)	15.0(2.8)	12.3(3.5)
	1978	19.0(1.2)	19.2(1.5)	18.8(1.5)	19.6(1.4)	15.4(2.1)	16.9(2.7)
Identify expected value	1992	60.6(1.3)	65.6(1.6)	56.0(2.0)	66.1(1.6)	44.4(2.4)	46.6(4.4)
	1990	57.4(1.6)	62.4(1.9)	52.2(2.1)	63.1(1.7)	34.8(3.7)	48.7(3.5)
	1986	54.9(1.9)	59.1(2.0)	50.8(3.5)	58.9(2.5)	38.8(2.5)	46.0(3.2)
	1982	65.6(1.8)	69.8(2.3)	61.3(2.2)	69.3(1.9)	46.2(3.3)	62.5(2.8)
	1978	64.8(1.3)	69.2(1.3)	60.4(2.1)	68.2(1.6)	51.8(2.4)	49.8(2.9)
Identify number sentence	1992	77.9(1.1)	76.4(2.0)	79.6(1.2)	81.3(1.3)	63.2(2.7)	75.1(3.3)
	1990	78.4(1.0)	77.0(1.4)	79.7(1.4)	81.1(1.1)	68.1(3.0)	68.3(2.4)
	1986	75.7(2.3)	77.3(2.1)	74.1(3.1)	78.5(2.7)	64.4(3.6)	67.7(4.4)
	1982	80.4(1.1)	79.8(1.8)	81.1(1.3)	84.9(1.0)	56.7(2.8)	73.7(3.9)
	1978	81.5(1.1)	81.5(1.3)	81.5(1.3)	85.4(1.0)	64.9(2.8)	65.1(4.0)
Understand decimal place value	1992	48.0(1.6)	49.9(2.1)	46.0(1.6)	53.3(2.0)	26.5(2.9)	40.0(3.7)
	1990	44.2(1.6)	47.3(1.8)	41.2(2.2)	48.9(1.8)	25.3(3.3)	29.0(4.0)
	1986	40.5(1.9)	42.2(1.6)	38.8(3.7)	44.3(2.1)	22.2(2.7)	32.5(4.6)
	1982	46.6(2.2)	46.3(2.7)	47.0(2.3)	52.4(2.6)	21.1(2.9)	24.7(3.3)
	1978	37.4(1.5)	39.2(1.7)	35.7(2.0)	40.9(1.7)	20.6(2.0)	22.8(4.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 13

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Divide integers	1992	30.2(1.8)	28.4(2.0)	32.2(2.1)	30.1(2.2)	28.3(2.2)	33.7(4.3)
	1990	30.4(1.6)	25.5(1.6)	35.2(2.3)	30.3(2.0)	29.8(3.6)	28.2(3.1)
	1986	28.5(2.8)	27.7(2.4)	29.4(3.8)	29.8(3.3)	25.4(3.6)	15.9(4.1)
	1982	30.0(1.7)	27.8(2.1)	32.3(2.2)	31.8(2.1)	23.1(3.0)	19.1(2.7)
	1978	30.2(2.1)	27.4(2.1)	33.0(2.6)	33.0(2.4)	17.3(2.9)	18.8(2.5)
Divide integers	1992	25.2(1.5)	22.2(1.5)	28.0(2.1)	25.5(1.6)	23.8(2.8)	20.2(3.2)
	1990	23.2(2.1)	21.6(2.5)	24.9(2.0)	24.4(2.3)	20.8(4.3)	16.0(2.6)
	1986	21.8(2.3)	20.5(2.2)	23.0(3.0)	23.9(2.7)	13.7(2.2)	7.7(1.9)
	1982	26.9(1.7)	24.7(2.1)	29.1(2.4)	28.6(1.9)	19.9(3.3)	16.8(3.9)
	1978	28.5(1.9)	26.2(2.3)	30.8(2.2)	30.6(2.2)	21.6(3.3)	15.8(6.9)
Convert fraction to decimal	1992	59.3(1.8)	58.2(1.9)	60.3(2.4)	63.2(2.2)	46.2(3.7)	45.8(3.9)
	1990	61.4(2.0)	60.4(2.7)	62.4(1.8)	66.8(1.9)	44.0(6.2)	47.8(4.5)
	1986	59.3(1.6)	57.3(2.0)	61.3(1.7)	62.6(2.1)	44.6(3.9)	53.6(6.5)
	1982	62.9(2.3)	60.3(2.7)	65.5(2.6)	66.9(2.8)	41.5(3.8)	53.6(5.9)
	1978	54.7(2.1)	53.6(2.4)	55.7(2.6)	61.0(2.1)	27.8(3.4)	29.5(5.7)
Convert fraction to decimal	1992	63.3(1.7)	62.5(1.9)	64.0(2.1)	67.7(2.0)	50.3(3.0)	48.9(5.1)
	1990	62.0(1.7)	61.9(2.5)	62.1(1.6)	67.0(1.8)	44.7(4.9)	54.0(4.2)
	1986	62.5(1.6)	59.7(2.2)	65.2(2.1)	67.4(2.2)	42.1(3.2)	49.0(4.9)
	1982	68.4(2.0)	64.5(2.5)	72.3(2.4)	72.5(2.3)	45.2(3.8)	65.8(5.6)
	1978	54.3(1.9)	53.4(2.1)	55.2(2.3)	59.8(1.8)	28.0(3.3)	37.3(5.4)
Convert fraction to decimal	1992	33.2(1.3)	35.2(1.5)	31.4(1.9)	37.8(1.6)	18.3(3.0)	20.5(3.0)
	1990	33.0(2.0)	35.0(2.8)	30.8(1.7)	38.1(2.1)	13.6(3.5)	23.7(4.0)
	1986	34.3(1.3)	35.6(1.8)	33.0(2.0)	38.1(1.8)	17.8(2.1)	22.5(3.2)
	1982	40.2(1.6)	40.4(2.5)	40.0(2.0)	44.5(2.0)	18.5(3.5)	28.9(4.8)
	1978	40.2(2.0)	41.4(2.0)	39.0(2.8)	45.9(2.0)	12.8(2.2)	23.0(4.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find area of irregular shape	1992	23.6(1.8)	28.4(2.6)	18.6(1.5)	27.2(2.0)	6.0(1.9)	17.8(3.0)
	1990	22.2(1.8)	25.8(2.2)	18.6(2.0)	24.3(2.1)	11.2(3.5)	13.6(3.7)
	1986	19.5(1.2)	24.7(2.0)	14.6(1.5)	22.5(1.3)	5.3(1.9)	6.2(2.6)
	1982	13.9(1.2)	17.2(1.7)	10.8(1.2)	16.1(1.3)	3.1(0.9)	3.2(1.8)
	1978	16.1(1.3)	22.1(1.8)	10.7(1.3)	17.8(1.4)	3.3(1.1)	6.8(2.9)
Relate square to circle	1992	63.9(1.4)	64.9(2.1)	62.8(1.9)	67.6(1.6)	46.6(3.2)	52.5(4.8)
	1990	63.6(1.7)	64.6(1.9)	62.6(2.1)	66.2(1.9)	56.3(4.5)	52.1(6.8)
	1986	54.6(1.6)	59.5(2.3)	50.2(1.8)	57.1(1.9)	44.0(3.2)	42.4(4.6)
	1982	57.7(1.5)	61.9(2.5)	53.6(2.2)	61.6(1.6)	35.1(3.5)	46.4(3.9)
Use properties of triangles	1992	70.4(1.2)	70.0(1.4)	70.8(1.7)	74.4(1.4)	55.6(3.3)	54.9(4.4)
	1990	68.3(1.8)	68.1(2.0)	68.4(2.0)	70.9(2.1)	58.2(4.5)	55.6(3.9)
	1986	62.7(1.9)	64.6(2.1)	61.0(2.2)	66.5(1.9)	48.7(4.2)	43.0(4.2)
	1982	58.2(1.5)	59.1(1.8)	57.3(1.6)	61.9(1.8)	40.4(3.4)	32.8(4.1)
	1978	60.3(1.6)	63.0(1.9)	57.8(2.1)	63.4(1.8)	41.1(3.6)	50.5(5.6)
Use properties of triangles	1992	57.7(1.5)	57.3(1.7)	58.2(2.1)	60.7(1.4)	47.5(2.8)	43.3(6.4)
	1990	57.4(1.6)	57.2(2.1)	57.5(1.7)	58.5(1.8)	51.9(3.2)	49.4(***)
	1986	57.2(1.5)	57.6(1.5)	56.8(2.3)	61.1(1.7)	42.0(3.4)	46.3(4.3)
	1982	54.3(1.2)	54.3(1.7)	54.3(1.7)	56.6(1.3)	44.0(3.2)	38.1(5.1)
	1978	53.2(1.5)	55.3(1,9)	51.3(1.9)	55.6(1.6)	42.2(3.2)	38.4(5.1)
Use properties of triangles	1992	53.9(1.2)	55.8(1.9)	51.9(1.4)	56.1(1.5)	42.7(2.9)	45.3(3.6)
	1990	49.6(2.0)	52.4(2.7)	46.7(2.3)	51.4(1.9)	43.9(6.2)	35.4(5.3)
	1986	45.7(1.7)	47.3(2.3)	44.3(1.8)	49.3(2.0)	30.1(3.9)	34.3(5.1)
	1982	44.9(1.8)	46.1(2.2)	43.8(1.8)	48.1(2.2)	26.1(2.7)	32.8(5.9)
	1978	47.4(1.4)	53.4(1.9)	41.9(1.8)	49.9(1.6)	37.8(3.9)	25.0(3.6)
Use properties of triangles	1992	55.8(1.2)	56.2(1.7)	55.4(1.6)	58.2(1.3)	45.2(2.8)	47.5(5.2)
	1990	54.3(1.5)	56.2(1.6)	52.3(2.1)	56.4(1.6)	43.7(3.4)	47.7(6.0)
	1986	50.2(1.5)	53.6(1.6)	47.0(2.1)	53.0(1.6)	38.0(3.0)	36.3(6.6)
	1982	50.9(1.6)	52.2(2.0)	49.6(1.9)	53.7(1.9)	33.0(2.5)	43.3(6.0)
	1978	54.7(1.8)	60.1(1.9)	49.8(2.2)	57.4(1.9)	42.3(3.8)	33.8(5.9)
Identify a sphere	1992	82.3(1.3)	86.0(1.7)	78.3(1.6)	84.1(1.3)	74.2(4.8)	77.9(3.5)
	1990	80.0(1.4)	82.4(1.8)	77.6(1.5)	83.7(1.1)	65.9(5.1)	67.8(7.6)
	1986	77.2(1.3)	79.4(2.1)	75.1(1.7)	81.8(1.4)	62.2(3.9)	54.9(4.8)
	1982	76.1(1.5)	77.5(1.7)	74.8(1.8)	81.6(1.4)	49.4(4.7)	55.6(4.6)
	1978	79.1(1.3)	81.0(1.5)	77.5(1.6)	83.4(1.2)	51.6(3.1)	65.2(4.2)
Apply angle addition property	1992	59.6(1.5)	61.7(1.6)	57.4(2.1)	62.3(1.4)	46.4(3.4)	51.1(5.5)
	1990	59.8(1.8)	60.5(1.9)	59.0(2.2)	61.9(2.2)	51.5(3.1)	51.8(5.5)
	1986	60.2(1.6)	62.3(2.4)	58.3(2.1)	64.0(1.6)	41.6(5.4)	51.8(5.3)
	1982	63.7(1.6)	65.3(1.9)	62.3(2.1)	67.4(1.5)	48.0(3.4)	43.9(4.3)
	1978	63.4(1.4)	63.6(2.2)	63.2(1.5)	66.3(1.5)	44.9(2.8)	55.6(6.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify parallel lines	1992	96.4(0.4)	95.7(0.7)	97.2(0.6)	97.6(0.4)	91.8(2.2)	93.2(2.5)
	1990	97.1(0.5)	96.8(0.8)	97.5(0.6)	98.0(0.4)	95.7(1.0)	91.1(5.2)
	1986	95.8(0.6)	96.2(0.7)	95.4(0.8)	97.9(0.4)	87.5(2.4)	90.9(3.2)
	1982	96.3(0.6)	97.0(0.7)	95.6(0.9)	97.8(0.5)	89.5(2.2)	87.3(2.3)
	1978	94.8(0.7)	94.3(1.0)	95.2(0.7)	96.8(0.6)	83.3(2.3)	85.0(7.8)
Identify perpendicular lines	1992	68.3(1.3)	64.9(1.6)	71.9(1.7)	71.4(1.3)	57.6(4.1)	52.9(3.2)
	1990	65.8(1.8)	64.1(2.4)	67.6(1.8)	68.9(2.2)	55.7(4.5)	46.9(4.2)
	1986	65.4(1.7)	65.8(2.0)	65.0(2.2)	70.1(1.7)	46.8(3.9)	48.7(5.1)
	1982	70.3(1.7)	73.8(2.3)	67.2(2.0)	74.6(1.7)	49.1(3.9)	53.1(4.7)
	1978	70.1(1.5)	72.8(1.8)	67.7(1.9)	74.6(1.3)	46.0(4.1)	42.8(5.4)
Apply concept of inequality	1992	23.8(1.0)	25.6(1.6)	21.9(1.6)	24.0(1.1)	21.5(2.9)	23.2(3.4)
	1990	25.5(1.3)	30.0(1.9)	21.0(1.3)	24.7(1.6)	25.1(2.4)	28.9(5.4)
	1986	25.5(1.2)	28.2(2.2)	23.1(1.3)	26.1(1.4)	19.4(2.3)	27.8(4.2)
	1982	35.4(1.2)	37.0(2.0)	34.0(1.3)	36.9(1.5)	25.7(3.0)	35.9(4.5)
	1978	34.3(1.4)	38.9(2.2)	30.2(1.3)	36.0(1.6)	23.3(3.4)	24.8(4.9)
Define equivalent equations	1992	57.0(1.3)	56.2(1.8)	57.8(1.6)	62.5(1.5)	38.7(3.0)	46.7(4.4)
	1990	55.1(1.6)	55.0(1.8)	55.1(2.3)	58.6(1.5)	40.2(3.8)	50.6(4.5)
	1986	56.5(2.8)	56.0(3.4)	57.0(3.2)	59.4(3.1)	44.0(4.4)	45.8(4.4)
	1982	52.5(2.2)	53.7(2.6)	51.3(2.6)	55.8(2.5)	38.4(3.7)	31.5(5.0)
	1978	60.2(1.4)	60.7(1.9)	59.7(2.1)	63.2(1.4)	42.9(4.7)	46.1(4.8)
Identify valid identity	1992	33.9(1.3)	34.2(1.8)	33.6(1.9)	35.3(1.5)	26.6(2.8)	27.6(4.8)
	1990	33.9(1.5)	33.9(1.8)	33.9(1.8)	35.2(1.5)	26.8(3.4)	29.2(9.4)
	1986	32.0(1.4)	33.4(1.9)	30.7(1.7)	33.0(1.7)	27.5(2.6)	26.7(3.2)
	1982	38.6(1.9)	39.5(2.4)	37.8(2.0)	40.2(2.0)	31.0(3.7)	33.1(4.2)
	1978	37.9(1.4)	38.1(2.1)	37.7(1.9)	39.4(1.6)	28.4(2.9)	28.9(6.8)
Add monomials	1992	79.5(1.2)	77.0(1.4)	82.1(1.8)	82.7(1.2)	67.0(3.8)	63.6(3.8)
	1990	78.3(1.5)	75.0(1.9)	81.6(1.6)	81.1(1.7)	68.0(5.3)	61.4(5.6)
	1986	73.3(1.7)	71.6(2.0)	74.9(1.9)	77.4(1.8)	55.8(3.9)	58.5(5.3)
	1982	64.4(1.3)	63.0(1.8)	65.7(1.7)	67.7(1.5)	46.4(3.4)	45.7(3.2)
	1978	63.3(1.8)	61.8(2.3)	64.7(2.0)	68.1(1.7)	36.4(3.1)	38.4(3.7)
Simplify square root	1992	16.4(1.0)	18.2(1.6)	14.6(1.3)	18.4(1.1)	6.1(2.0)	9.0(2.8)
	1990	15.2(1.1)	17.9(1.4)	12.4(1.3)	16.1(1.2)	11.0(2.7)	8.7(4.4)
	1986	15.0(1.3)	18.2(1.8)	12.1(1.4)	16.6(1.5)	4.8(1.8)	7.1(3.0)
	1982	11.8(1.3)	13.2(1.8)	10.5(1.3)	12.8(1.4)	3.9(1.3)	11.1(3.8)
	1978	11.3(1.2)	14.4(1.5)	8.4(1.3)	12.2(1.2)	5.2(1.9)	4.8(2.8)
Evaluate function for value	1992	56.3(1.6)	55.4(2.1)	57.2(2.1)	61.6(1.8)	36.4(3.0)	40.6(5.7)
	1990	50.4(1.5)	47.9(2.0)	52.5(1.9)	53.2(1.5)	44.9(5.4)	34.6(4.6)
	1986	53.4(1.8)	52.5(2.6)	54.3(2.4)	56.4(1.8)	38.7(5.2)	43.1(4.0)
	1982	48.8(1.8)	49.6(1.9)	48.1(2.3)	50.8(1.7)	38.7(4.5)	34.1(7.3)
	1978	43.7(1.7)	44.3(2.7)	43.1(2.4)	46.4(1.9)	27.8(3.3)	29.5(3.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Evaluate algebraic expression	1992	91.2(1.0)	89.9(1.2)	92.5(1.1)	93.2(0.7)	83.8(3.6)	82.6(4.9)
	1990	90.8(0.8)	90.1(1.2)	91.6(0.8)	92.3(0.7)	85.6(2.9)	83.7(6.3)
	1986	89.3(0.9)	88.7(1.3)	90.0(0.9)	92.3(1.0)	78.2(3.0)	81.0(3.4)
	1982	89.1(0.9)	88.8(1.3)	89.5(1.2)	91.6(0.9)	75.3(2.4)	82.3(3.8)
	1978	89.9(0.9)	90.2(1.2)	89.6(1.3)	92.8(0.8)	73.9(3.4)	77.0(3.7)
Identify number line property	1992	74.5(1.2)	75.3(1.7)	73.7(1.8)	79.2(1.2)	54.4(3.5)	58.2(4.2)
	1990	71.7(1.4)	73.2(2.0)	70.3(1.6)	76.5(1.3)	52.7(5.0)	58.1(4.1)
	1986	69.0(1.7)	70.3(2.1)	67.7(2.2)	74.4(1.8)	44.9(3.3)	51.1(3.8)
	1982	61.4(1.6)	65.5(2.4)	57.3(2.5)	66.1(1.6)	37.6(2.4)	39.4(4.7)
	1978	70.9(1.6)	74.9(2.1)	67.0(1.8)	75.4(1.7)	46.9(3.6)	54.6(5.3)
Identify linear inequality	1992	34.4(1.2)	34.7(1.8)	34.1(1.9)	35.2(0.9)	29.3(5.9)	29.8(4.5)
	1990	35.1(1.7)	37.4(2.0)	33.1(2.0)	36.6(1.8)	30.3(4.2)	29.4(3.2)
	1986	35.4(1.9)	38.1(2.5)	32.7(2.0)	35.5(2.2)	33.8(3.5)	34.8(5.5)
	1982	32.0(1.7)	31.9(2.1)	32.0(1.7)	33.0(2.1)	28.0(3.0)	25.5(4.7)
	1978	33.6(1.0)	36.3(1.4)	30.9(1.4)	34.9(1.2)	27.7(3.4)	22.3(3.8)
Find percent greater than 100	1992	73.6(1.6)	78.3(2.3)	68.6(1.7)	77.0(1.6)	58.4(3.6)	62.8(4.4)
	1990	72.8(1.6)	76.0(1.9)	69.7(2.1)	77.4(1.8)	55.7(3.8)	55.2(8.0)
	1986	70.6(1.4)	75.2(1.7)	66.5(1.9)	74.4(1.6)	57.4(3.6)	56.1(5.1)
	1982	65.0(1.6)	67.4(2.1)	62.6(1.8)	68.0(1.7)	49.5(3.5)	54.4(4.8)
	1978	58.2(1.5)	66.7(1.7)	50.6(2.1)	60.0(1.6)	41.7(2.8)	60.4(9.1)
Understand concept of percent	1992	71.0(1.6)	75.2(2.3)	66.5(1.7)	75.8(1.3)	51.3(5.3)	50.6(4.1)
	1990	70.5(1.8)	75.1(2.2)	65.9(1.9)	75.8(1.7)	54.4(6.8)	43.1(8.0)
	1986	69.6(1.4)	74.1(1.9)	65.5(1.9)	75.8(1.2)	46.3(4.3)	47.7(7.6)
	1982	71.4(1.8)	76.2(1.8)	66.6(2.3)	76.3(1.5)	46.8(5.0)	51.5(6.1)
	1978	67.9(1.5)	75.2(1.6)	61.4(2.1)	72.0(1.5)	45.3(3.3)	43.0(6.0)
Convert decimal to percent	1992	60.8(1.4)	62.7(1.7)	58.9(1.6)	64.5(1.6)	41.2(4.1)	55.5(3.5)
	1990	61.3(1.8)	62.0(2.7)	60.6(1.9)	64.1(1.7)	49.1(5.2)	45.7(5.9)
	1986	54.1(1.6)	55.3(2.4)	53.0(1.6)	58.4(1.8)	34.3(2.4)	37.5(4.8)
	1982	44.9(1.9)	49.2(2.8)	40.6(2.0)	48.5(2.1)	25.7(3.5)	29.9(5.0)
	1978	45.0(1.6)	45.7(1.9)	44.3(2.0)	47.4(1.6)	27.6(3.2)	40.9(7.0)
Convert percent to decimal	1992	93.3(1.0)	92.8(1.1)	93.8(1.1)	94.5(1.0)	89.1(2.8)	88.0(2.6)
	1990	94.9(0.6)	94.3(0.9)	95.5(0.7)	95.6(0.5)	90.1(2.1)	96.2(1.9)
	1986	92.6(0.6)	91.1(1.1)	94.0(0.7)	94.0(0.5)	87.1(2.6)	88.2(2.8)
	1982	81.6(0.9)	81.7(1.6)	81.6(1.3)	83.4(1.1)	74.7(2.3)	71.9(5.5)
	1978	78.2(1.1)	77.8(1.6)	78.5(1.2)	79.0(1.1)	74.0(3.0)	72.1(6.9)
Use concept of percent	1992	63.4(1.8)	68.5(2.5)	58.0(2.2)	69.6(1.8)	37.8(4.2)	44.2(5.0)
	1990	62.4(1.8)	66.0(2.2)	58.8(1.9)	69.5(1.9)	37.2(5.3)	41.0(6.2)
	1986	61.1(1.7)	64.8(2.1)	57.7(2.3)	67.4(1.8)	34.2(4.2)	42.3(7.1)
	1982	70.9(1.7)	74.5(1.5)	67.4(2.7)	76.8(1.9)	45.2(3.1)	45.1(1.8)
	1978	69.8(1.3)	74.4(1.7)	65.4(1.7)	74.9(1.1)	38.6(4.4)	53.0(5.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find percent of number	1992	71.1(1.0)	73.8(1.5)	68.4(1.5)	74.0(1.0)	62.2(3.0)	56.4(4.7)
	1990	69.2(1.6)	74.1(1.8)	64.2(2.2)	72.8(1.7)	58.1(5.1)	46.4(4.8)
	1986	68.4(1.4)	71.9(1.6)	65.2(1.9)	72.9(1.3)	49.5(3.5)	54.9(5.3)
	1982	69.6(1.4)	75.1(1.6)	64.2(2.0)	73.5(1.5)	49.4(2.7)	49.1(4.6)
	1978	69.3(1.4)	76.0(1.7)	63.1(1.8)	73.6(1.4)	45.8(4.0)	50.8(5.7)
Solve percent problem	1992	70.0(1.2)	74.5(1.3)	65.4(1.9)	75.1(1.1)	52.7(4.0)	57.0(4.4)
	1990	68.2(1.5)	73.0(1.7)	64.0(2.3)	73.7(1.4)	52.6(4.5)	51.1(3.9)
	1986	68.3(1.5)	70.9(2.1)	65.7(1.8)	73.4(1.4)	43.0(4.6)	60.9(5.5)
	1982	72.4(1.9)	72.6(2.9)	72.2(1.9)	75.5(2.2)	57.6(3.3)	57.5(2.8)
	1978	67.0(1.5)	69.3(2.0)	64.9(1.8)	70.4(1.6)	47.2(3.1)	54.2(5.9)
Add integers	1992	87.2(1.0)	88.7(0.9)	85.6(1.7)	89.8(1.0)	77.8(2.3)	76.8(4.2)
	1990	87.0(1.2)	86.3(1.6)	87.6(1.2)	89.2(1.4)	77.7(3.4)	77.9(5.0)
	1986	82.9(1.2)	83.8(1.4)	82.2(1.9)	86.8(1.0)	66.3(4.3)	70.2(5.1)
	1982	76.8(1.5)	79.1(1.6)	74.5(1.9)	82.2(1.3)	49.6(5.2)	59.4(5.1)
	1978	79.8(1.5)	79.1(1.7)	80.3(1.8)	84.7(1.4)	49.7(3.1)	60.8(5.0)
Add integers	1992	90.5(0.9)	91.6(1.3)	89.4(1.0)	92.9(0.8)	82.0(3.6)	80.0(3.6)
	1990	89.4(1.2)	88.9(1.6)	89.9(1.2)	92.6(0.9)	80.0(3.4)	70.6(***)
	1986	87.2(1.3)	89.5(1.4)	85.1(1.7)	90.8(1.0)	71.9(4.4)	76.4(4.7)
	1982	84.1(1.3)	84.7(1.5)	83.5(1.8)	89.0(1.3)	60.3(3.9)	61.6(5.1)
	1978	84.7(1.3)	85.8(1.5)	83.6(1.6)	88.5(1.1)	60.5(4.1)	74.4(4.6)
Estimate square root	1992	47.1(1.5)	50.7(1.7)	43.4(2.1)	52.3(1.8)	23.8(3.4)	34.6(3.5)
	1990	48.3(2.0)	51.4(2.4)	45.2(2.3)	52.7(2.1)	32.7(6.0)	26.4(4.8)
	1986	46.2(1.5)	50.1(2.1)	42.7(2.1)	50.7(1.7)	27.3(3.6)	29.7(3.2)
	1982	42.5(2.0)	48.3(2.8)	36.7(2.5)	47.3(2.2)	17.9(2.3)	27.3(3.7)
	1978	42.6(1.4)	47.6(2.0)	38.1(1.8)	47.3(1.5)	16.6(2.6)	15.0(4.0)
Estimate square root	1992	59.0(1.5)	61.2(1.8)	56.8(2.0)	63.9(1.5)	36.3(4.1)	47.9(4.7)
	1990	58.1(2.1)	60.2(2.6)	56.0(2.0)	62.6(2.2)	41.6(6.9)	39.4(5.0)
	1986	53.1(1.8)	57.9(2.7)	48.7(2.1)	58.1(1.8)	32.1(4.4)	37.5(4.7)
	1982	56.3(1.8)	59.9(2.2)	52.9(2.6)	60.6(1.7)	31.0(3.3)	44.7(4.9)
	1978	58.1(1.9)	62.8(2.0)	53.9(2.5)	62.5(2.1)	33.2(3.8)	33.4(7.2)
Solve number sentence	1992	72.7(1.3)	72.0(1.9)	73.4(1.6)	77.4(1.2)	53.1(4.3)	59.5(4.3)
	1990	72.4(1.3)	71.4(1.9)	73.5(1.4)	75.5(1.4)	59.6(2.8)	67.9(4.1)
	1986	69.9(1.7)	71.5(2.0)	68.5(2.1)	74.2(1.8)	52.3(4.6)	60.8(4.8)
	1982	60.6(1.4)	63.9(1.9)	57.6(1.7)	65.7(1.4)	35.9(3.9)	39.7(3.8)
	1978	68.2(1.5)	70.0(1.9)	66.4(2.1)	73.7(1.4)	37.5(3.3)	42.4(5.8)
Estimate weight	1992	62.3(1.2)	62.1(1.9)	62.6(1.9)	66.1(1.2)	44.5(4.0)	56.5(4.4)
	1990	63.6(1.7)	64.5(2.1)	62.7(2.1)	65.2(1.9)	57.9(4.1)	57.2(8.2)
	1986	62.9(1.3)	65.6(2.0)	60.5(1.6)	65.6(1.3)	52.1(2.9)	55.6(5.3)
	1982	45.9(1.7)	48.4(2.5)	43.5(1.6)	48.5(2.1)	30.6(3.4)	41.8(5.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Estimate total weight	1992	53.6(1.8)	54.9(2.3)	52.2(2.1)	57.9(1.8)	36.8(4.3)	43.8(3.4)
	1990	53.3(1.8)	56.3(2.4)	50.3(2.0)	55.8(2.1)	43.7(4.1)	45.3(5.1)
	1986	50.0(1.4)	51.6(2.1)	48.6(1.9)	53.7(1.6)	34.6(3.3)	36.1(3.5)
	1982	41.0(1.5)	44.9(1.8)	37.4(2.0)	43.0(1.5)	27.4(2.8)	40.7(2.6)
Estimate cost of pencils	1992	89.9(0.7)	91.3(0.9)	88.4(0.9)	91.6(0.8)	85.0(1.6)	82.7(3.1)
	1990	91.1(0.7)	92.1(0.9)	90.1(0.9)	91.9(0.9)	89.2(1.8)	84.0(3.6)
	1986	89.4(0.7)	89.8(1.2)	89.0(1.1)	91.8(0.7)	77.9(2.7)	85.5(3.8)
	1982	78.6(1.0)	81.8(1.3)	75.7(1.7)	80.8(1.0)	69.0(3.0)	65.9(5.8)
Estimate cost using percent	1992	44.0(1.2)	47.2(1.5)	40.6(1.9)	45.3(1.5)	36.4(3.2)	47.7(4.3)
	1990	47.0(1.2)	51.8(1.9)	42.2(1.5)	48.1(1.4)	43.1(3.3)	34.2(4.2)
	1986	44.1(1.4)	46.5(1.8)	41.9(1.8)	46.2(1.5)	37.0(3.2)	36.8(3.0)
	1982	44.0(1.6)	48.1(1.9)	40.3(1.9)	45.1(1.6)	35.7(3.6)	44.6(3.3)
Estimate difference in length	1992	81.8(1.3)	83.0(1.7)	80.6(1.6)	84.7(1.1)	68.5(4.6)	77.4(3.5)
	1990	80.7(1.2)	81.3(1.8)	80.0(1.2)	82.9(1.1)	69.8(4.6)	74.6(8.1)
	1986	82.5(0.9)	82.7(1.3)	82.2(1.1)	86.9(0.8)	65.0(2.1)	66.9(5.5)
	1982	72.6(1.4)	73.9(2.0)	71.3(1.6)	76.2(1.6)	57.0(4.2)	57.4(4.1)
Use deductive reasoning	1992	78.5(0.9)	77.8(1.4)	79.3(1.0)	81.2(0.9)	68.3(2.8)	67.4(4.8)
	1990	80.2(1.4)	79.2(1.7)	81.3(1.8)	83.6(1.3)	70.6(4.1)	66.0(6.9)
	1986	78.7(0.9)	77.8(1.3)	79.5(1.4)	81.4(1.1)	69.8(4.1)	65.2(3.5)
	1982	81.7(1.0)	80.4(1.8)	82.9(1.2)	83.1(1.1)	74.6(3.2)	75.6(4.0)
	1978	84.1(0.9)	82.7(1.6)	85.4(1.2)	86.3(0.9)	70.8(2.9)	75.2(5.6)
Determine age relationship	1992	89.0(0.7)	90.2(1.0)	87.8(1.2)	91.1(0.7)	79.3(2.9)	84.0(2.6)
	1990	86.8(1.0)	86.9(1.4)	86.8(1.0)	89.3(1.0)	79.2(2.6)	72.1(5.4)
	1986	86.3(1.1)	87.6(1.2)	85.1(1.5)	89.4(1.0)	71.8(3.3)	82.3(4.2)
	1982	79.7(1.3)	80.8(1.5)	78.7(1.6)	82.4(1.2)	63.6(3.0)	73.9(4.3)
	1978	82.3(1.2)	81.4(1.6)	83.1(1.2)	85.8(1.1)	60.1(3.7)	72.3(4.2)
Identify valid conclusion	1992	84.7(1.1)	81.6(1.7)	87.9(1.2)	86.1(1.3)	81.4(2.6)	75.0(3.6)
	1990	81.8(1.0)	79.1(1.6)	84.5(1.3)	83.9(1.0)	78.2(2.9)	70.3(4.5)
	1986	78.3(1.4)	75.8(2.0)	80.7(1.6)	80.9(1.3)	70.4(4.4)	67.0(5.7)
	1982	69.3(1.2)	66.5(1.6)	71.9(1.4)	71.0(1.3)	63.9(4.5)	57.5(3.9)
	1978	72.0(1.4)	70.3(1.7)	73.5(1.9)	72.6(1.4)	69.8(4.2)	62.5(5.4)
Identify valid conclusion	1992	37.2(1.3)	40.6(2.1)	33.7(1.2)	39.9(1.3)	28.2(3.4)	27.9(4.1)
	1990	38.7(1.4)	40.8(1.9)	36.6(1.7)	41.1(1.6)	26.5(2.3)	36.7(3.4)
	1986	41.9(1.3)	44.8(2.1)	39.3(2.1)	44.1(1.5)	31.6(2.9)	36.8(3.8)
	1982	56.6(1.2)	61.3(1.8)	52.0(1.8)	59.4(1.1)	41.7(3.9)	49.6(3.8)
	1978	58.9(1.2)	63.4(1.6)	54.6(1.9)	60.9(1.3)	48.4(3.9)	53.9(5.0)
Identify false statement	1992	51.6(1.2)	54.2(1.9)	48.9(1.6)	55.1(1.3)	38.5(4.6)	39.6(3.8)
	1990	51.2(1.5)	51.5(2.1)	50.9(1.8)	55.2(1.5)	39.1(5.4)	32.9(5.5)
	1986	51.0(1.7)	53.1(2.2)	49.0(1.9)	55.1(1.8)	35.7(4.1)	37.0(5.1)
	1982	50.4(1.3)	51.2(1.5)	49.7(2.0)	54.8(1.4)	29.5(3.1)	33.2(3.8)
	1978	52.3(1.7)	53.9(2.1)	50.7(2.4)	56.9(1.6)	29.8(3.2)	25.4(5.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Compute using data in table	1992	33.8(1.3)	33.6(2.2)	34.1(1.0)	37.1(1.5)	18.4(3.1)	24.2(2.4)
	1990	32.2(1.7)	34.8(2.5)	29.5(1.8)	36.6(1.7)	16.7(2.9)	14.1(5.8)
	1986	34.6(1.4)	34.6(2.3)	34.5(1.7)	39.7(1.6)	17.2(2.7)	15.6(4.9)
	1982	43.5(1.6)	45.5(1.8)	41.6(2.2)	48.2(1.7)	21.6(4.6)	23.8(3.9)
	1978	50.9(1.4)	49.3(2.0)	52.6(1.8)	55.7(1.6)	28.5(4.1)	19.8(5.3)
Interpret data in table	1992	70.7(1.7)	74.5(2.0)	6[illegible](1.8)	75.7(1.6)	46.0(4.1)	65.3(5.7)
	1990	70.2(1.5)	71.9(2.0)	68.5(1.5)	75.3(1.4)	49.3(4.7)	56.0(***)
	1986	65.4(1.5)	69.0(2.2)	62.2(1.9)	71.7(1.9)	38.4(2.7)	53.9(3.8)
	1982	66.4(1.4)	70.2(1.6)	62.6(2.0)	72.5(1.2)	33.6(3.7)	46.5(4.5)
	1978	66.0(1.3)	69.5(1.6)	62.9(2.0)	71.4(1.2)	34.2(4.1)	45.4(6.5)
Read line graph	1992	90.4(0.7)	90.9(1.0)	89.9(0.9)	91.4(0.7)	87.3(2.1)	84.6(3.0)
	1990	89.3(0.8)	90.4(1.1)	88.1(1.1)	90.8(0.8)	83.7(2.7)	86.6(3.2)
	1986	86.8(1.0)	88.3(1.5)	85.5(1.1)	91.0(0.9)	69.9(3.4)	75.4(3.8)
	1982	86.7(1.0)	89.1(1.3)	84.5(1.2)	90.2(0.9)	71.1(2.4)	70.8(4.4)
	1978	80.4(1.2)	82.7(1.4)	78.1(1.7)	83.2(1.5)	62.9(3.1)	67.8(7.0)
Interpret line graph	1992	78.6(1.6)	79.1(2.1)	78.1(1.8)	81.2(1.3)	64.6(4.3)	76.5(4.5)
	1990	79.2(1.0)	79.9(1.7)	78.6(1.2)	83.3(1.0)	65.1(3.3)	66.7(9.2)
	1986	76.3(1.3)	77.1(2.0)	75.6(1.7)	80.3(1.4)	61.1(3.5)	64.7(5.1)
	1982	77.3(1.5)	78.6(1.9)	76.0(1.7)	80.9(1.3)	62.5(3.4)	56.3(5.4)
	1978	69.9(1.1)	74.3(1.3)	65.4(1.9)	72.1(1.2)	52.4(2.2)	69.4(4.1)
Solve multi-step problem	1992	26.7(1.1)	32.1(1.6)	20.9(1.2)	31.0(1.1)	10.5(2.4)	11.2(4.2)
	1990	26.3(1.4)	31.5(2.0)	21.0(1.5)	30.6(1.4)	10.1(3.2)	8.5(4.2)
	1986	26.9(1.5)	32.3(2.1)	21.9(1.6)	31.3(1.7)	8.8(2.6)	13.3(3.1)
	1982	27.1(1.5)	30.9(2.0)	23.4(2.2)	31.4(1.5)	6.4(1.9)	13.0(4.2)
	1978	29.6(1.2)	36.7(1.9)	22.9(1.3)	33.4(1.3)	7.2(2.1)	16.3(4.9)
Solve multi-step problem	1992	32.8(1.2)	41.2(1.8)	24.3(1.3)	39.0(1.5)	10.1(3.2)	19.8(5.2)
	1990	31.7(1.5)	37.1(1.8)	26.9(1.9)	38.8(1.4)	7.6(1.3)	14.7(2.5)
	1986	33.1(1.7)	40.7(2.1)	25.2(2.2)	37.5(1.6)	12.8(2.4)	17.4(3.3)
	1982	25.8(1.1)	30.4(2.0)	21.5(1.6)	29.3(1.3)	8.6(1.8)	12.2(1.8)
	1978	30.2(1.5)	39.2(2.3)	21.6(1.4)	34.2(1.8)	7.5(1.6)	11.7(4.3)
Solve money problem	1992	70.7(1.4)	71.0(2.1)	70.4(1.7)	75.3(1.6)	50.3(3.0)	68.4(4.3)
	1990	68.3(1.5)	66.7(2.2)	69.8(1.8)	74.4(1.2)	48.2(5.0)	51.6(6.9)
	1986	67.7(1.6)	67.7(2.5)	67.7(1.5)	73.0(1.4)	42.2(4.1)	58.9(5.1)
	1982	67.0(1.0)	65.0(1.6)	68.8(1.4)	71.0(1.1)	48.4(2.7)	48.9(6.1)
	1978	68.5(1.5)	69.4(2.1)	67.6(1.8)	71.8(1.4)	44.1(3.9)	57.1(5.4)
Identify algebraic identity	1992	67.1(1.1)	65.3(1.5)	69.0(1.4)	71.0(1.4)	52.0(4.3)	50.7(3.9)
	1990	64.8(1.9)	64.1(2.5)	65.4(1.8)	68.6(1.8)	50.7(5.3)	48.8(***)
	1986	63.8(1.5)	63.7(1.7)	63.9(2.4)	68.5(1.3)	44.1(4.1)	42.9(5.1)
	1982	64.2(1.9)	63.2(2.4)	65.1(2.1)	69.8(1.6)	42.4(3.5)	26.9(4.9)
	1978	69.0(1.8)	69.6(1.9)	68.5(2.3)	73.5(1.8)	43.4(2.4)	46.3(5.7)

The standard errors of the estimated percentages appear in parentheses.

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NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Relate meter to yard	1992	70.6(1.6)	76.7(1.9)	64.6(2.1)	76.9(1.4)	43.5(2.4)	71.5(4.8)
	1990	67.2(1.7)	75.2(1.7)	60.1(2.3)	74.3(1.5)	42.3(4.4)	53.6(3.9)
	1986	69.3(1.4)	77.4(1.5)	61.1(2.0)	73.3(1.4)	45.5(3.6)	70.9(7.9)
	1982	71.6(1.4)	79.1(1.9)	64.3(1.6)	76.2(1.4)	47.4(3.1)	57.2(4.2)
	1978	71.4(1.6)	78.7(1.8)	64.8(2.3)	75.8(1.3)	43.9(2.9)	58.3(7.3)
Estimate height of door	1992	86.3(0.8)	90.9(0.9)	81.5(1.1)	89.2(0.8)	71.5(3.3)	83.4(2.8)
	1990	84.3(1.1)	89.2(1.5)	79.2(1.4)	88.0(1.1)	75.0(2.8)	66.7(7.5)
	1986	82.3(1.4)	89.8(1.2)	75.4(2.0)	85.0(1.6)	71.9(3.6)	71.7(3.9)
	1982	82.5(1.0)	89.6(1.3)	75.9(1.6)	85.9(0.9)	62.8(2.9)	78.7(3.3)
	1978	86.4(1.0)	92.0(1.1)	81.5(1.4)	89.4(1.0)	69.3(2.9)	78.1(6.0)
Solve multi-step problem	1992	31.9(1.2)	34.6(1.9)	29.2(1.5)	36.4(1.4)	15.4(4.0)	22.1(3.5)
	1990	30.9(1.5)	33.6(1.8)	28.5(1.8)	36.8(1.5)	13.7(2.6)	15.2(2.8)
	1986	26.4(1.8)	27.3(2.2)	25.5(2.3)	28.7(2.2)	13.1(2.8)	17.7(3.6)
	1982	25.1(1.5)	26.6(1.5)	23.7(2.1)	28.2(1.6)	9.9(2.2)	13.5(3.9)
	1978	29.0(1.5)	30.1(1.7)	28.0(1.7)	32.4(1.6)	7.2(1.9)	21.1(4.5)
Estimate circumference	1992	23.5(1.3)	26.5(1.9)	20.4(1.7)	26.3(1.4)	10.3(2.3)	14.5(2.7)
	1990	23.7(1.6)	27.8(1.7)	19.5(1.8)	26.1(1.8)	13.7(3.4)	14.5(4.7)
	1986	19.9(1.1)	23.0(1.5)	17.0(1.8)	22.9(1.4)	6.7(1.5)	14.0(4.1)
	1982	16.9(1.3)	20.4(2.1)	13.4(1.5)	19.3(1.5)	5.6(1.5)	5.6(3.6)
	1978	22.5(1.4)	27.1(2.2)	17.9(1.5)	24.7(1.5)	10.5(2.7)	12.0(4.1)
Find area given perimeter	1992	44.6(1.4)	46.8(1.5)	42.3(1.9)	47.8(1.5)	33.1(3.2)	30.2(3.6)
	1990	43.1(2.2)	44.5(2.8)	41.7(2.4)	46.5(2.3)	29.3(6.0)	27.1(5.2)
	1986	38.7(1.7)	39.4(2.2)	38.0(2.1)	42.0(1.8)	21.2(4.5)	23.8(3.4)
	1982	34.0(2.1)	36.1(2.7)	32.0(2.3)	37.2(2.4)	17.7(2.4)	19.6(3.2)
	1978	32.3(1.7)	37.8(2.6)	27.3(2.0)	34.3(1.8)	19.6(3.1)	22.4(5.0)
Find area of rectangle	1992	68.9(1.6)	70.1(2.6)	67.7(1.5)	72.5(1.6)	47.9(4.0)	68.3(4.1)
	1990	66.4(1.7)	68.9(2.2)	63.9(1.8)	69.1(1.7)	55.7(3.7)	54.2(***)
	1986	62.7(1.7)	63.4(2.1)	62.0(2.0)	65.7(2.0)	49.8(4.8)	50.6(4.0)
	1982	73.9(1.5)	75.3(2.1)	72.7(1.6)	76.3(1.7)	60.5(4.4)	68.3(4.0)
	1978	73.4(1.8)	73.8(2.6)	73.0(1.7)	78.3(1.7)	43.5(3.5)	65.4(6.4)
Apply vertical angles	1992	91.1(0.8)	92.3(0.8)	89.8(1.0)	92.9(0.7)	84.7(3.1)	84.8(3.6)
	1990	89.6(0.9)	89.6(1.3)	89.6(1.1)	92.0(0.7)	79.7(3.5)	82.6(4.7)
	1986	88.0(1.2)	89.1(1.6)	87.0(1.4)	90.4(1.1)	78.0(3.1)	76.6(5.9)
	1982	85.1(1.1)	86.1(1.3)	84.3(1.9)	87.7(1.3)	74.9(2.1)	68.5(4.5)
	1978	81.5(1.2)	80.9(1.5)	82.0(1.5)	85.3(1.1)	59.9(4.8)	60.0(4.5)
Apply supplementary angles	1992	55.9(1.5)	57.3(1.9)	54.4(1.6)	61.3(1.4)	30.9(3.5)	41.2(3.7)
	1990	55.2(1.9)	58.6(2.6)	51.7(1.9)	60.0(2.1)	37.2(5.9)	34.9(3.6)
	1986	48.0(1.9)	50.8(2.2)	45.4(2.2)	53.9(2.0)	24.4(3.0)	25.7(4.4)
	1982	40.0(2.6)	42.6(2.8)	37.6(2.8)	45.5(2.7)	13.3(2.3)	13.2(3.6)
	1978	39.7(1.6)	42.7(2.1)	36.6(2.4)	43.7(1.6)	15.5(4.2)	15.1(3.7)

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify sign of divisor	1992	64.5(1.5)	65.7(2.0)	63.3(2.0)	67.7(1.6)	49.2(5.4)	58.0(5.2)
	1990	60.3(1.5)	60.5(1.7)	60.1(1.9)	64.8(1.4)	45.0(5.5)	51.6(4.2)
	1986	58.6(2.2)	61.6(3.1)	55.6(2.0)	62.2(2.4)	38.6(4.3)	50.6(7.2)
	1982	59.4(1.9)	61.2(2.6)	57.8(2.2)	61.5(2.0)	44.7(4.4)	58.6(5.9)
	1978	56.5(1.5)	57.9(2.3)	55.3(1.6)	58.7(1.5)	45.9(3.6)	43.0(7.2)
Add whole numbers	1992	98.6(0.3)	98.3(0.5)	99.0(0.3)	99.0(0.3)	96.9(1.2)	98.7(0.9)
	1990	97.9(0.3)	97.5(0.4)	98.2(0.4)	98.3(0.3)	96.7(1.4)	96.9(1.5)
	1986	98.6(0.5)	98.7(0.5)	98.4(0.6)	99.3(0.2)	95.1(3.6)	96.3(1.8)
	1982	98.1(0.4)	97.8(0.5)	98.3(0.4)	97.9(0.4)	99.2(0.6)	98.3(1.3)
Add whole numbers	1992	97.9(0.4)	97.2(0.8)	98.7(0.4)	98.3(0.4)	96.2(1.4)	98.2(0.9)
	1990	98.4(0.3)	97.7(0.6)	99.1(0.3)	98.6(0.3)	97.9(1.4)	99.4(0.6)
	1986	98.4(0.4)	98.1(0.5)	98.6(0.6)	98.7(0.3)	96.3(2.2)	98.7(1.4)
	1982	97.7(0.4)	96.6(0.7)	98.8(0.4)	97.8(0.5)	97.6(0.9)	97.1(1.4)
Add whole numbers	1992	94.3(0.5)	93.8(0.9)	94.8(0.8)	95.6(0.6)	91.2(1.7)	88.9(3.0)
	1990	95.4(0.5)	94.2(0.9)	96.5(0.5)	96.2(0.5)	95.4(1.1)	90.5(2.4)
	1986	94.7(0.8)	93.6(1.3)	95.9(0.8)	96.0(0.7)	91.6(3.0)	89.0(3.7)
	1982	92.6(0.7)	90.1(1.3)	95.0(0.7)	93.7(0.6)	88.2(2.4)	87.3(3.1)
Multiply fractions	1992	74.6(1.2)	71.2(2.0)	78.1(1.5)	76.6(1.3)	65.2(3.5)	64.2(4.0)
	1990	76.7(1.5)	73.9(1.8)	79.6(1.6)	77.7(1.7)	73.5(2.5)	65.3(9.6)
	1986	75.1(1.2)	72.9(1.5)	77.2(1.7)	78.0(1.3)	66.1(3.0)	57.6(5.7)
	1982	71.6(1.4)	71.3(1.6)	71.8(1.9)	74.8(1.3)	58.2(1.9)	46.8(5.2)
	1978	75.0(1.3)	71.8(1.8)	78.1(1.7)	78.1(1.2)	58.9(4.0)	53.7(5.2)
Multiply fractions	1992	68.1(1.2)	66.0(1.8)	70.4(1.4)	70.9(1.4)	56.3(5.0)	55.5(4.5)
	1990	72.6(1.6)	70.7(1.8)	74.5(2.0)	73.5(1.8)	69.3(2.5)	60.9(9.8)
	1986	67.4(1.6)	63.6(1.9)	70.8(2.0)	69.5(1.7)	57.0(4.3)	57.6(5.0)
	1982	59.7(1.8)	60.2(2.0)	59.3(2.4)	63.9(1.7)	40.2(2.8)	33.3(5.1)
	1978	66.9(1.7)	66.3(2.1)	67.4(2.0)	70.9(1.5)	40.8(4.0)	53.5(5.7)
Multiply fractions	1992	74.4(1.1)	72.0(1.6)	76.9(1.7)	77.0(1.2)	62.4(3.8)	63.1(3.4)
	1990	78.2(1.3)	76.4(1.4)	80.0(1.6)	79.1(1.3)	76.8(2.2)	63.4(9.3)
	1986	75.4(1.3)	73.4(1.9)	77.2(1.6)	76.7(1.6)	69.9(2.9)	68.5(6.9)
	1982	69.4(1.7)	68.1(1.9)	70.7(2.0)	72.5(1.7)	53.4(2.7)	50.5(4.4)
	1978	75.8(1.4)	73.8(2.0)	77.7(1.8)	78.4(1.2)	60.2(4.5)	60.8(7.1)
Find percent given numbers	1992	76.0(1.4)	83.6(1.4)	68.0(1.9)	80.2(1.1)	63.2(3.5)	56.5(4.9)
	1990	72.9(1.6)	79.3(1.8)	66.3(1.9)	77.0(1.8)	58.7(5.3)	54.6(5.9)
	1986	72.5(1.6)	79.9(1.6)	65.6(2.2)	77.7(1.7)	52.9(3.5)	53.2(4.6)
	1982	74.3(1.5)	80.7(2.0)	68.4(2.1)	78.6(1.2)	45.6(3.1)	71.8(4.3)
Find percent of number	1992	69.9(1.1)	75.5(1.6)	64.1(1.6)	74.8(1.1)	48.7(3.6)	58.2(4.2)
	1990	68.9(1.2)	71.5(1.8)	66.3(1.6)	71.9(1.4)	57.3(4.5)	55.9(8.3)
	1986	63.9(1.3)	68.4(2.0)	59.8(1.4)	67.6(1.4)	43.6(3.5)	60.2(4.7)
	1982	54.1(1.9)	57.4(2.9)	51.1(2.2)	56.7(2.1)	36.4(2.7)	50.4(4.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find percent greater than 100	1992	63.7(0.9)	70.4(1.5)	56.7(1.6)	68.6(1.2)	41.6(3.9)	52.8(4.7)
	1990	63.3(1.8)	67.1(2.4)	59.5(1.9)	67.8(2.1)	46.2(4.6)	45.3(5.8)
	1986	56.3(1.4)	62.2(1.9)	50.8(1.7)	61.0(1.4)	34.0(3.2)	39.8(6.1)
	1982	46.4(2.6)	50.6(2.9)	42.5(2.7)	50.3(3.0)	22.5(2.9)	40.6(3.3)
Find number given percent	1992	39.7(1.5)	43.4(2.0)	35.8(1.8)	41.7(1.7)	33.1(3.7)	29.1(4.3)
	1990	37.6(1.3)	40.6(2.0)	34.6(1.7)	40.6(1.6)	21.1(2.1)	33.2(3.5)
	1986	32.0(1.2)	38.4(1.9)	26.0(1.2)	34.4(1.5)	19.7(2.6)	30.0(5.0)
	1982	36.4(2.1)	40.8(2.8)	32.4(2.1)	38.3(2.5)	24.5(2.4)	34.9(4.7)
Find percent given numbers	1992	66.4(1.4)	74.5(1.4)	58.2(2.0)	72.3(1.5)	46.3(3.7)	52.9(4.0)
	1990	62.9(1.5)	70.9(1.6)	55.8(1.8)	69.2(1.3)	43.6(3.6)	44.8(3.2)
	1986	63.4(1.7)	71.0(2.1)	55.6(1.9)	69.9(1.5)	35.7(4.1)	47.1(5.7)
	1982	60.3(1.4)	69.1(2.1)	52.2(2.1)	65.1(1.6)	32.5(2.6)	48.7(3.4)
Find percent of number	1992	66.8(1.5)	70.5(1.9)	63.1(1.8)	71.0(1.4)	49.0(4.2)	66.0(7.1)
	1990	63.1(1.7)	66.6(2.2)	59.9(2.1)	68.5(1.5)	45.9(4.7)	49.1(4.8)
	1986	63.7(1.9)	68.5(2.6)	58.7(2.1)	67.8(1.9)	43.5(4.3)	57.2(6.7)
	1982	55.5(1.8)	56.0(2.2)	55.1(2.5)	58.4(1.8)	40.1(3.7)	45.7(7.1)
Find percent greater than 100	1992	60.0(1.5)	67.0(1.9)	52.9(2.2)	65.9(1.3)	36.8(4.5)	51.2(5.6)
	1990	58.8(1.7)	65.6(1.8)	52.7(2.3)	65.5(1.5)	36.4(4.8)	42.9(6.7)
	1986	56.9(2.2)	62.7(3.0)	51.0(2.2)	61.8(2.1)	33.7(5.5)	44.5(8.5)
	1982	49.8(1.8)	54.8(2.8)	45.2(2.5)	53.4(1.9)	33.2(3.9)	33.1(4.4)
Find percent given numbers	1992	50.4(1.7)	54.4(2.0)	46.4(2.2)	53.8(1.7)	34.8(3.6)	44.9(4.6)
	1990	45.4(1.4)	50.2(2.0)	41.2(2.1)	50.2(1.4)	30.2(4.3)	27.6(4.8)
	1986	42.9(1.9)	48.5(3.1)	37.1(2.0)	46.2(2.0)	28.2(3.7)	30.6(4.9)
	1982	34.7(0.9)	40.5(1.4)	29.4(1.6)	36.4(1.1)	23.3(2.1)	29.6(2.4)
Find number given percent	1992	52.5(1.6)	56.5(2.0)	48.4(1.9)	57.2(2.0)	32.6(3.2)	45.9(4.9)
	1990	49.4(1.6)	53.0(1.9)	46.2(2.1)	54.5(1.4)	31.6(6.1)	39.8(4.6)
	1986	44.1(1.8)	47.0(2.8)	41.1(1.7)	48.8(1.8)	21.7(2.6)	33.2(6.6)
	1982	29.5(1.7)	32.6(2.2)	26.6(2.2)	32.3(2.0)	16.4(1.9)	15.0(3.5)
Subtract decimals	1992	74.3(1.2)	71.6(1.7)	77.0(1.5)	77.6(0.9)	61.2(3.7)	62.2(5.7)
	1990	74.0(1.5)	71.8(1.9)	76.3(1.7)	75.6(1.6)	66.3(2.5)	66.0(9.5)
	1986	72.2(1.1)	69.0(1.6)	75.2(1.6)	74.7(1.4)	61.3(3.7)	64.8(4.3)
	1982	73.8(1.3)	74.3(1.7)	73.3(1.7)	77.6(1.2)	52.9(4.2)	58.4(4.2)
	1978	71.0(1.8)	69.2(1.9)	72.7(2.0)	74.9(1.6)	46.8(3.7)	55.5(6.2)
Subtract decimals	1992	86.4(0.7)	87.5(1.2)	85.3(1.3)	88.0(1.0)	81.0(3.0)	87.0(3.0)
	1990	86.9(0.8)	87.8(1.2)	86.1(1.2)	88.0(0.9)	80.7(2.2)	88.2(2.8)
	1986	85.9(1.0)	85.1(1.5)	86.6(1.5)	88.1(1.2)	76.1(3.1)	79.4(3.8)
	1982	84.7(1.1)	84.6(1.5)	84.8(1.3)	86.6(1.3)	76.0(3.0)	75.6(3.1)
	1978	86.3(1.0)	86.5(1.4)	86.1(1.6)	87.4(1.1)	77.4(2.5)	89.6(6.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Divide decimals	1992	78.9(1.2)	77.0(1.7)	80.9(1.6)	83.5(1.0)	59.0(4.5)	76.9(3.3)
	1990	78.6(1.5)	75.9(1.9)	81.0(1.6)	83.8(1.0)	61.1(4.8)	66.6(4.6)
	1986	77.6(1.2)	76.0(1.8)	79.2(1.6)	84.5(1.0)	48.4(5.2)	55.5(5.5)
	1982	65.1(2.1)	62.4(2.9)	67.7(1.9)	70.2(2.5)	41.8(3.8)	41.6(2.5)
	1978	77.9(1.5)	77.2(1.7)	78.7(2.1)	81.8(1.4)	50.8(4.1)	71.1(6.0)
Add decimals	1992	89.5(1.0)	87.5(1.3)	91.5(1.2)	93.1(0.9)	76.5(2.8)	81.4(7.1)
	1990	89.8(1.0)	87.3(1.5)	92.1(1.0)	93.2(0.7)	79.2(3.0)	81.5(3.8)
	1986	88.4(1.3)	85.2(2.2)	91.7(0.9)	92.2(1.1)	69.0(4.4)	84.6(2.7)
	1982	86.0(1.0)	82.5(1.5)	89.2(1.1)	89.0(1.3)	72.1(3.8)	71.9(4.4)
	1978	88.8(1.1)	87.6(1.5)	90.1(1.3)	91.9(0.8)	68.0(4.1)	82.6(4.6)
Divide decimals	1992	78.7(1.4)	77.0(1.9)	80.4(1.7)	83.2(1.6)	60.4(3.9)	74.8(4.9)
	1990	77.7(1.3)	74.6(1.6)	80.4(1.6)	82.2(1.1)	62.7(3.3)	67.4(3.7)
	1986	74.9(2.1)	71.3(3.2)	78.6(1.5)	80.4(2.2)	47.1(4.9)	67.9(2.8)
	1982	70.7(1.4)	63.6(1.6)	77.2(1.9)	74.7(1.6)	53.9(5.6)	49.3(4.5)
	1978	80.1(1.3)	77.7(1.9)	82.5(1.6)	83.5(1.3)	56.6(3.7)	76.0(5.0)
Subtract decimals	1992	74.2(1.6)	73.7(2.3)	74.7(1.4)	78.9(1.6)	56.0(6.0)	69.6(3.7)
	1990	76.5(1.3)	73.8(1.8)	78.9(1.5)	80.1(1.4)	68.2(3.9)	63.1(4.1)
	1986	74.7(1.9)	71.9(2.6)	77.5(1.9)	78.9(2.0)	55.4(5.6)	69.1(4.0)
	1982	57.5(2.4)	48.6(2.7)	65.7(2.3)	62.1(2.9)	38.5(3.1)	30.3(4.4)
	1978	70.9(1.6)	67.4(2.1)	74.2(2.0)	75.9(1.6)	41.1(3.9)	53.8(9.0)
Divide decimals	1992	65.7(2.0)	62.7(2.3)	68.7(2.1)	70.4(2.2)	48.7(5.6)	60.2(4.1)
	1990	66.3(1.6)	63.6(1.8)	68.8(1.8)	71.1(1.6)	54.3(5.1)	51.3(4.7)
	1986	64.7(2.3)	61.2(3.2)	68.4(2.3)	69.3(2.4)	42.6(4.8)	59.3(5.5)
	1982	44.9(1.5)	36.7(2.0)	52.5(2.0)	48.4(1.8)	28.4(3.7)	27.4(5.1)
	1978	61.4(1.7)	57.4(2.4)	65.3(2.1)	65.8(1.6)	35.8(3.7)	51.9(4.6)
Estimate total cost	1992	33.9(1.3)	41.1(2.0)	26.3(1.3)	37.0(1.5)	20.9(3.8)	28.9(2.8)
	1990	37.4(1.3)	42.1(1.6)	32.6(1.9)	40.9(1.5)	22.5(2.2)	30.6(4.6)
	1986	35.5(1.5)	41.6(2.0)	29.9(1.7)	36.7(1.6)	28.0(3.5)	34.8(5.1)
	1982	29.6(1.5)	34.1(2.1)	25.5(1.6)	30.9(1.7)	21.1(3.1)	26.3(3.6)
Multiply equation by constant	1992	18.4(1.1)	21.7(1.5)	15.0(1.2)	19.7(1.1)	10.7(2.1)	11.7(3.7)
	1990	18.4(1.2)	22.1(1.8)	14.7(1.6)	18.7(1.2)	15.8(3.3)	9.7(3.0)
	1986	17.3(1.2)	19.3(1.6)	15.5(1.4)	18.3(1.4)	11.3(2.4)	14.7(3.5)
	1982	21.8(1.7)	23.9(2.2)	19.9(1.7)	22.6(2.1)	15.8(2.8)	21.7(3.3)
	1978	20.1(1.1)	25.0(1.7)	15.2(1.3)	22.4(1.2)	6.5(1.8)	7.3(2.1)
Solve equation (square root)	1992	58.4(1.7)	59.6(2.1)	57.1(2.0)	64.6(1.8)	33.7(4.9)	46.8(6.3)
	1990	53.3(1.8)	53.7(2.3)	52.9(2.1)	60.4(1.6)	31.5(4.7)	31.6(4.3)
	1986	51.2(1.8)	53.2(2.5)	49.1(2.3)	57.1(1.8)	24.0(4.3)	33.3(4.6)
	1982	45.7(2.6)	45.7(4.0)	45.8(2.1)	49.7(3.3)	27.1(3.4)	26.9(6.1)
	1978	36.8(2.0)	37.2(2.5)	36.3(2.2)	39.3(2.2)	16.6(3.4)	34.8(5.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Identify expected value	1992	63.7(1.4)	70.7(1.8)	56.4(1.8)	67.7(1.4)	47.4(3.6)	55.2(4.5)
	1990	62.6(1.7)	69.3(2.2)	56.0(1.8)	67.7(1.5)	44.2(3.8)	51.1(9.0)
	1986	61.2(1.6)	68.5(2.1)	54.4(1.9)	65.6(1.7)	45.9(3.9)	50.8(5.4)
	1982	78.8(1.5)	83.1(1.3)	74.7(2.5)	83.2(1.5)	59.2(3.8)	61.5(3.6)
	1978	73.6(1.5)	77.3(2.2)	69.9(1.8)	76.6(1.6)	56.5(3.4)	66.2(5.8)
Compute using data in table	1992	81.6(0.8)	83.4(1.1)	79.7(1.0)	84.5(0.8)	73.2(2.5)	69.9(4.2)
	1990	78.8(1.2)	79.9(1.5)	77.6(1.6)	80.0(1.4)	73.3(3.5)	70.4(6.3)
	1986	75.1(1.3)	77.3(1.5)	73.1(1.4)	78.6(1.3)	59.4(3.1)	68.0(5.7)
	1982	80.0(1.4)	80.0(1.8)	80.1(1.7)	84.2(1.1)	58.4(3.5)	65.8(3.6)
	1978	77.8(1.2)	78.2(1.5)	77.3(1.5)	81.2(1.1)	58.8(3.2)	66.7(6.4)
Interpret data in table	1992	88.0(0.8)	88.4(1.0)	87.6(1.4)	91.9(0.6)	73.3(3.0)	75.6(4.3)
	1990	88.6(1.0)	88.7(1.2)	88.5(1.3)	91.6(1.0)	80.5(3.4)	70.4(6.9)
	1986	87.9(1.1)	90.0(1.4)	85.9(1.3)	91.1(1.2)	76.0(2.8)	76.9(2.7)
	1982	87.8(1.0)	89.6(1.1)	86.2(1.6)	91.4(0.8)	70.4(3.5)	74.6(4.3)
	1978	87.4(1.3)	88.7(1.2)	86.0(1.8)	91.7(0.9)	62.8(3.8)	70.7(4.9)
Understand decimal place value	1992	79.4(1.4)	81.1(1.6)	77.6(1.9)	83.3(1.2)	62.8(4.8)	67.0(5.0)
	1990	76.6(1.4)	78.0(2.1)	75.3(1.5)	81.4(1.7)	58.0(4.3)	61.6(5.0)
	1986	70.5(1.3)	73.1(2.1)	68.2(1.5)	76.6(1.2)	41.8(4.9)	55.5(3.7)
	1982	73.3(1.7)	75.2(1.6)	71.6(2.0)	79.6(1.3)	41.0(3.6)	53.7(3.6)
	1978	73.2(1.8)	73.0(3.0)	73.3(2.0)	78.7(1.9)	41.1(3.6)	57.6(4.3)
Understand decimal place value	1992	76.4(1.7)	78.0(1.7)	74.8(2.1)	81.1(1.4)	57.9(4.7)	62.8(5.8)
	1990	74.1(1.5)	77.2(2.0)	70.9(1.8)	77.4(1.5)	61.8(5.6)	57.2(8.2)
	1986	69.4(1.7)	71.7(2.1)	67.4(2.1)	74.7(1.5)	48.1(4.9)	51.0(5.4)
	1982	71.6(1.7)	73.7(1.7)	69.7(2.5)	75.9(1.7)	46.7(4.5)	62.6(3.3)
	1978	72.3(2.0)	72.1(2.8)	72.5(2.1)	76.3(2.2)	52.5(4.1)	52.6(7.5)
Divide integers	1992	82.1(1.1)	79.6(1.6)	84.7(1.3)	83.6(1.3)	76.9(2.9)	73.0(3.3)
	1990	80.8(1.4)	78.2(1.7)	83.4(1.5)	82.2(1.5)	75.7(3.9)	69.9(6.2)
	1986	76.3(1.7)	75.0(2.4)	77.4(1.7)	78.2(1.8)	67.5(3.4)	66.3(6.1)
	1982	68.6(2.1)	70.0(2.4)	67.3(2.6)	71.2(2.5)	55.6(2.8)	55.7(3.7)
	1978	67.1(1.8)	64.5(2.6)	69.8(1.6)	69.3(2.2)	50.5(4.4)	64.5(2.9)
Divide integers	1992	69.9(1.5)	67.6(1.7)	72.3(1.9)	72.6(1.4)	59.3(4.6)	57.3(5.8)
	1990	67.4(1.6)	66.4(2.1)	68.5(1.8)	69.7(1.7)	59.1(5.8)	52.5(8.1)
	1986	61.6(1.7)	63.6(2.3)	59.8(2.1)	65.6(1.7)	43.8(3.6)	45.0(4.4)
	1982	60.2(2.2)	62.0(2.5)	58.6(2.5)	63.2(2.7)	42.8(3.6)	49.7(3.3)
	1978	56.2(2.2)	55.1(2.8)	57.4(2.0)	59.5(2.5)	36.7(4.0)	46.8(4.8)
Understand opposite of integer	1992	73.9(1.0)	71.4(1.6)	76.5(1.4)	76.6(1.2)	61.2(4.5)	63.5(2.6)
	1990	72.0(1.8)	70.8(2.4)	73.3(1.9)	74.0(2.2)	63.5(4.9)	64.5(4.0)
	1986	68.0(1.6)	69.4(1.9)	66.7(2.1)	71.6(1.5)	52.1(4.4)	54.6(4.8)
	1982	67.5(2.0)	69.1(2.5)	66.0(2.1)	72.0(1.3)	46.1(4.1)	46.2(***)
	1978	72.0(1.6)	72.5(1.8)	71.5(1.9)	75.7(1.8)	50.9(2.8)	53.8(5.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Mathematics Trend Assessment — Student Questionnaire: Age 17

Weighted percent correct by subgroup across years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Understand opposite of integer	1992	76.0(1.1)	75.0(1.4)	77.0(1.6)	78.5(1.2)	63.5(3.6)	67.8(3.6)
	1990	73.5(1.5)	72.2(2.1)	74.8(1.7)	76.6(1.7)	62.8(4.4)	60.5(4.4)
	1986	71.2(1.5)	69.6(2.0)	72.7(1.8)	74.3(1.6)	56.7(4.4)	57.1(4.6)
	1982	70.5(1.9)	69.4(2.2)	71.6(2.2)	75.1(1.6)	48.1(3.4)	53.0(6.7)
	1978	71.7(1.7)	70.7(1.6)	72.5(2.2)	75.8(1.7)	48.0(2.7)	51.4(6.3)
Convert decimal to fraction	1992	46.5(1.6)	44.3(2.1)	48.8(1.8)	49.7(1.7)	32.2(4.7)	34.6(3.3)
	1990	52.9(1.6)	52.3(2.1)	53.5(2.0)	57.1(1.4)	37.8(4.9)	35.0(5.5)
	1986	50.2(2.1)	50.5(2.7)	49.9(2.5)	53.7(2.4)	37.2(2.5)	34.5(5.1)
	1982	59.8(2.3)	58.0(2.2)	61.4(3.0)	65.8(2.3)	33.7(3.2)	30.7(3.7)
	1978	61.7(1.9)	61.4(2.3)	62.1(2.3)	65.3(2.2)	42.9(2.8)	43.0(6.9)
Convert decimal to fraction	1992	26.6(1.6)	30.4(2.1)	22.7(1.6)	29.8(1.7)	12.5(3.4)	18.7(3.3)
	1990	24.2(2.1)	30.4(2.7)	17.9(2.1)	26.8(2.3)	11.6(5.0)	9.8(2.8)
	1986	19.0(1.9)	24.1(2.6)	14.2(1.9)	21.0(2.2)	11.5(2.5)	9.1(2.8)
	1982	20.4(1.5)	24.8(2.3)	16.3(1.2)	23.1(1.8)	7.1(1.3)	8.9(1.8)
	1978	24.7(1.5)	30.5(2.1)	19.3(1.7)	27.3(1.6)	8.7(2.1)	14.5(3.8)

The standard errors of the estimated percentages appear in parentheses.

Data Appendix

Reading

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	207.6(1.0)	210.0(0.7)	215.0(1.0)†*	210.9(0.7)†	211.8(1.1)†	209.2(1.2)	210.5(0.9)	Q
SEX								
Male	49.8(0.4)	50.0(0.4)	50.0(0.4)	49.9(0.5)	50.3(0.8)	50.8(0.9)	50.8(0.7)	
	201.2(1.1)*	204.3(0.8)	210.0(1.1)†	207.5(0.8)†	207.5(1.4)†	204.0(1.7)	205.9(1.3)†	LQ
Female	50.2(0.4)	50.0(0.4)	50.0(0.4)	50.1(0.5)	49.7(0.8)	49.2(0.9)	49.2(0.7)	
	213.9(1.0)	215.8(0.8)	220.1(1.1)†*	214.2(0.8)	216.3(1.3)	214.5(1.2)	215.4(0.9)	Q
RACE/ETHNICITY								
White	84.3(1.4)*	80.0(1.2)*	79.0(1.3)†*	74.9(1.2)†	75.2(1.0)†	74.0(1.0)†	74.1(0.9)†	
	214.0(0.9)*	216.6(0.7)	221.3(0.8)†*	218.2(0.8)†	217.7(1.4)	217.0(1.3)	217.9(1.0)†	LQ
Black	13.5(1.3)	13.4(0.8)	14.0(1.0)	15.5(0.5)	15.9(0.7)	16.1(0.6)	15.7(0.4)	
	170.1(1.7)*	181.2(1.2)†	189.3(1.8)†	185.7(1.1)†	188.5(2.4)†	181.8(2.9)†	184.5(2.2)†	LQ
Hispanic	*****(0.0)	4.8(0.8)	5.7(0.8)	7.3(1.4)	6.2(1.0)	6.2(0.6)	6.8(0.8)	
	*****(0.0)	182.7(2.2)	190.2(2.3)	187.2(2.1)	193.7(3.5)†	189.4(2.3)	191.7(3.1)	L
Other	2.2(0.6)	1.8(0.5)*	1.3(0.3)*	2.3(0.2)*	2.7(0.4)	3.6(0.7)	3.4(0.3)	
	193.5(3.8)	207.8(4.1)	218.5(3.8)†	223.8(2.5)†*	228.4(5.4)†*	205.5(4.4)	207.5(4.0)	LQ
GRADE								
Below Modal Grade	24.3(0.8)*	22.7(0.8)*	27.7(1.5)*	34.2(0.3)†*	36.8(0.3)†*	42.0(0.5)†	42.9(0.5)†	
	177.5(1.2)*	183.3(1.1)†*	188.9(1.3)†	186.9(0.9)†*	192.6(1.8)†	188.8(1.8)†	192.3(1.4)†	LQ
At Modal Grade	74.7(0.8)*	75.3(0.9)*	71.4(1.4)*	65.3(0.2)†*	62.6(0.3)†*	57.7(0.5)†	57.0(0.5)†	
	217.1(1.1)*	218.2(0.7)*	225.2(0.8)†	222.8(0.8)†	222.8(1.5)†	223.8(1.5)†	224.1(1.0)†	LQ
Above Modal Grade	1.0(0.1)*	0.5(0.1)†*	0.4(0.1)†	0.4(0.1)†	0.5(0.2)	0.2(0.1)†	0.2(0.1)†	
	232.3(4.1)	225.9(4.3)	243.1(6.1)	253.5(4.7)†	262.4(11.0)	241.6(20.1)	242.9(16.7)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
REGION								
Northeast	26.2(1.5)	26.9(1.1)*	22.6(2.1)	21.7(0.4)†	22.4(1.5)	22.3(1.1)	21.1(1.3)	
	213.0(1.7)	214.8(1.3)	221.1(2.1)†	215.7(1.7)	215.2(2.6)	217.4(2.2)	217.6(2.6)	N
Southeast	22.0(1.7)	21.9(0.8)	24.3(2.3)	23.6(1.2)	25.3(1.7)	24.2(1.2)	23.4(1.4)	
	193.9(2.9)	201.1(1.2)	210.3(2.3)†*	204.3(1.6)†	207.2(2.1)†*	197.4(3.2)	199.3(2.0)	Q
Central	29.3(2.0)	26.4(1.2)	25.1(3.4)	27.0(1.3)	23.8(0.6)*	25.0(0.7)	28.3(1.1)	
	214.9(1.2)	215.5(1.2)	216.7(1.4)	215.3(1.5)	218.2(2.2)	212.7(2.0)	215.8(1.6)	N
West	22.6(1.9)	24.7(1.1)	28.1(2.1)	27.7(0.5)	28.5(1.1)†	28.5(0.8)†	27.2(0.9)	
	205.0(2.0)	207.0(2.0)	212.8(1.8)†	207.8(1.5)	207.9(2.6)	209.6(2.8)	209.3(2.3)	N
TYPE OF COMMUNITY								
Extreme Rural	8.8(1.2)	7.7(1.0)	9.1(1.8)	6.6(1.2)	9.7(2.3)	8.8(1.8)	10.6(2.9)	
	200.2(3.3)	204.2(2.5)	211.8(1.7)†	201.2(3.4)	213.7(4.2)	209.4(4.5)	206.5(2.9)	L
Disadvantaged Urban	7.5(1.1)	8.1(1.1)	6.1(1.1)	12.1(1.9)	7.4(2.2)	10.2(2.7)	9.4(1.9)	
	179.2(2.7)	184.2(2.5)	187.6(2.1)	191.5(1.6)†	192.0(5.5)	186.1(4.7)	183.5(3.9)	Q
Advantaged Urban	11.8(1.9)	11.2(1.5)	13.7(2.6)	13.4(1.9)	15.7(3.2)	10.6(2.1)	9.6(1.9)	
	229.8(1.3)	227.3(1.5)	232.5(1.4)	230.8(1.7)	222.4(2.7)*	227.1(3.3)	233.6(2.8)	N
Other	71.9(2.1)	73.1(1.8)	71.1(3.1)	67.9(2.5)	67.2(4.7)	70.4(4.2)	70.4(3.9)	
	207.8(1.1)	210.9(0.8)	214.5(1.1)†	211.3(0.8)	211.3(1.4)	209.8(1.5)	211.6(1.1)	Q
PARENTS' EDUCATION LEVEL								
Less Than H.S.	10.0(0.4)*	9.9(0.4)*	6.5(0.5)†	5.5(0.2)†	4.6(0.6)†	5.0(0.5)†	5.0(0.4)†	
	188.6(1.5)	189.9(1.3)	194.3(1.6)†	195.1(1.4)†	192.5(4.9)	192.6(3.2)	194.9(4.5)	N
Graduated H.S.	22.3(0.5)*	23.8(0.4)*	25.3(0.8)†*	19.3(0.6)†*	15.9(0.6)†	17.1(0.8)†	15.4(0.8)†	
	207.8(1.2)	211.3(0.9)	213.0(1.3)†*	208.9(1.0)	210.8(2.2)	209.1(1.8)	207.4(1.5)	Q
Post H.S.	33.0(0.9)*	34.2(0.7)*	40.1(1.5)†	36.2(1.0)*	45.1(1.4)†	42.3(1.3)†	44.3(0.9)†	
	223.9(1.1)	221.5(0.9)	226.0(1.1)*	222.9(0.9)	220.0(1.7)	217.7(2.0)†	219.5(1.4)	LQ
Unknown	34.7(0.7)	32.1(0.8)	28.1(1.0)†*	37.6(0.9)	34.2(1.3)	35.5(1.1)	34.4(1.3)	
	197.4(1.0)*	203.1(0.8)†	206.1(1.0)†	204.4(0.7)†	204.4(1.5)†	201.4(1.5)	204.1(1.2)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	88.8(1.4)	86.9(1.7)	87.7(2.7)	92.1(1.9)	88.2(1.7)	
	*****(0.0)	*****(0.0)	213.5(1.1)*	209.4(0.8)†	210.2(1.2)	207.5(1.4)†	208.6(1.0)†	L
Non-Public	*****(0.0)	*****(0.0)	11.2(1.4)	12.9(1.7)	12.3(2.7)	7.9(1.9)	11.8(1.7)	
	*****(0.0)	*****(0.0)	227.0(1.8)	222.8(1.6)	223.4(3.0)	228.3(3.3)	224.7(2.3)	N
QUARTILES								
Upper	25.0(0.8)	25.0(0.7)	25.0(1.1)	25.0(0.8)	25.0(1.2)	25.0(1.0)	25.0(0.9)	
	252.6(0.5)*	251.3(0.7)*	255.0(0.8)	257.9(0.4)†	259.1(1.6)†	261.3(1.1)†*	256.4(0.9)†	L
Middle Two	50.0(0.6)	50.0(0.5)	50.0(0.6)	50.0(0.6)	50.0(1.4)	50.0(0.8)	50.0(0.9)	
	210.6(0.4)	213.1(0.3)†	218.0(0.3)†*	211.8(0.3)	212.8(0.7)†	209.4(0.6)*	212.0(0.7)	LQ
Lower	25.0(0.9)	25.0(0.8)	25.0(1.0)	25.0(0.7)	25.0(1.3)	25.0(1.0)	25.0(0.9)	
	156.6(0.7)*	162.8(0.5)†	169.3(1.0)†*	161.6(0.6)†	162.7(1.6)†	156.5(1.5)*	161.7(1.0)†	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	255.2(0.9)*	255.9(0.8)*	258.5(0.9)	257.1(0.5)	257.5(1.0)	256.8(0.8)	259.8(1.2)†	L
SEX								
Male	50.0(0.4)	49.9(0.5)	49.4(0.3)	51.0(0.5)	49.5(0.8)	50.2(0.9)	49.2(0.9)	
	249.6(1.0)	249.6(0.8)	254.3(1.1)†	252.6(0.6)†	251.8(1.3)	250.5(1.1)	254.1(1.7)	L
Female	50.0(0.4)	50.1(0.5)	50.6(0.3)	49.0(0.5)	50.5(0.8)	49.8(0.9)	50.8(0.9)	
	260.8(0.9)*	262.3(0.9)	262.6(0.9)	261.7(0.6)	263.0(1.0)	263.1(1.1)	265.3(1.2)†	L
RACE/ETHNICITY								
White	84.2(1.4)*	80.9(1.2)*	79.7(1.8)*	76.8(0.6)†*	76.4(0.7)†*	73.5(0.8)†	73.0(0.7)†	
	260.9(0.7)*	262.1(0.7)*	264.4(0.7)†	262.6(0.6)*	261.3(1.1)*	262.3(0.9)*	266.4(1.2)†	L
Black	14.5(1.4)	12.7(0.9)*	13.5(1.3)	14.1(0.2)*	15.0(0.3)	15.4(0.2)	16.1(0.4)	
	222.4(1.2)*	225.7(1.2)*	232.8(1.5)†	236.3(1.0)†	242.9(2.4)†	241.5(2.2)†	237.6(2.3)†	LQ
Hispanic	*****(0.0)	4.9(0.8)*	5.5(1.0)	6.9(0.7)	6.1(0.6)	8.2(0.5)†	7.3(0.4)†	
	*****(0.0)	232.5(3.0)	237.2(2.0)	239.6(1.7)	240.1(3.5)	237.8(2.3)	239.2(3.5)	N
Other	1.2(0.3)*	1.6(0.5)*	1.3(0.3)*	1.9(0.2)*	2.5(0.3)†	3.0(0.8)	3.5(0.3)†	
	251.3(3.0)*	255.6(3.4)*	253.7(6.4)	260.0(2.8)	269.3(4.2)†	252.7(5.3)	268.5(3.4)†	L
GRADE								
Below Modal Grade	27.7(0.9)*	27.6(0.9)*	27.9(1.2)*	37.3(0.2)†*	38.8(0.5)†*	39.4(0.4)†*	43.1(0.7)†	
	229.5(1.0)*	232.3(0.9)*	239.5(1.5)†	239.1(0.7)†	242.8(1.4)†	242.7(1.1)†	242.8(1.9)†	LQ
At Modal Grade	71.0(0.9)*	71.6(0.9)*	70.2(1.3)*	62.1(0.2)†*	60.5(0.3)†*	60.1(0.2)†*	55.6(0.5)†	
	264.8(0.8)*	264.8(0.7)*	266.0(0.8)*	266.7(0.5)*	266.7(1.1)*	265.8(0.9)*	271.8(1.1)†	LQ
Above Modal Grade	1.2(0.2)	0.9(0.1)	0.5(0.1)†	0.6(0.2)†	0.7(0.5)	0.5(0.3)	1.3(0.6)	
	278.0(2.4)*	277.8(4.2)*	274.2(4.9)*	294.5(7.5)	271.8(10.8)*	289.6(16.0)	312.1(3.9)†	LQ

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L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
REGION								
Northeast	24.4(1.5)	24.8(1.1)	24.2(2.2)	22.6(0.4)	22.8(2.2)	23.2(1.0)	22.2(0.8)	
	261.1(2.0)	258.5(1.8)	260.0(1.8)	260.4(0.6)	258.6(2.4)	258.9(1.8)	264.6(3.2)	N
Southeast	23.6(2.2)	22.2(1.1)	23.9(2.7)	23.2(1.7)	23.7(1.4)	23.3(0.8)	23.1(1.6)	
	244.7(1.7)*	249.3(1.5)	252.6(1.6)†	256.4(1.5)†	257.6(2.2)†	255.5(2.2)†	253.8(2.5)†	LQ
Central	28.6(2.2)	27.6(1.3)	26.0(3.5)	27.2(1.6)	25.6(2.0)	23.7(0.7)	26.0(1.0)	
	260.1(1.8)	261.5(1.4)	264.5(1.4)	258.8(1.0)	255.9(2.0)	257.4(1.5)	263.5(3.0)	N
West	23.4(2.3)	25.5(1.1)	25.8(2.3)	27.1(0.5)	27.9(1.0)	29.8(0.9)	28.7(1.2)	
	253.6(1.3)	253.2(1.7)	256.4(2.0)	253.8(0.9)	257.9(2.1)	255.6(1.6)	257.5(1.6)	L
TYPE OF COMMUNITY								
Extreme Rural	9.6(1.5)	8.4(1.0)	9.1(1.4)	5.3(1.1)	6.1(2.0)	8.3(2.4)	9.5(1.9)	
	247.4(2.7)	248.5(2.1)	254.8(1.9)	254.9(1.9)	262.4(2.9)†	251.2(4.7)	257.2(3.0)	L
Disadvantaged Urban	7.2(1.3)	8.2(1.0)	9.5(2.1)	9.0(1.5)	7.3(2.1)	9.9(1.8)	10.6(1.5)	
	234.3(1.7)	230.3(2.7)	241.6(3.8)	238.9(1.9)	239.0(3.0)	241.0(3.2)	230.9(4.3)	Q
Advantaged Urban	12.0(1.7)	11.5(2.0)	12.8(2.0)	10.5(2.3)	13.3(3.5)	11.5(2.1)	11.1(2.0)	
	272.9(1.4)	272.7(1.4)	276.8(1.4)	274.5(2.2)	266.3(3.3)*	270.1(3.2)	280.8(2.9)	N
Other	71.3(2.6)	72.0(2.1)	68.6(3.1)	75.2(3.1)	73.3(4.5)	70.2(3.3)	68.8(3.0)	
	255.4(0.8)*	257.1(0.9)	257.9(0.9)	257.1(0.6)*	257.3(1.2)	257.5(0.9)	261.2(1.4)†	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	16.4(0.6)*	14.0(0.6)†*	10.2(0.6)†*	8.6(0.4)†*	7.9(0.6)†	7.9(0.6)†	6.0(0.5)†	
	238.4(1.3)	238.7(1.2)	238.5(1.1)	240.0(0.9)	246.5(2.1)†	240.8(1.8)	239.2(2.6)	N
Graduated H.S.	31.6(0.7)	33.2(0.6)*	30.7(0.7)	35.3(1.1)†*	30.9(1.0)	30.8(1.2)	28.1(1.2)	
	255.5(0.8)	254.6(0.7)	253.5(0.9)	253.4(0.7)	252.7(1.2)	251.4(0.9)†	252.1(1.7)	L
Post H.S.	38.1(1.1)*	40.0(0.9)*	49.1(1.3)†*	45.1(1.1)†*	51.6(1.5)†	50.2(1.5)†*	56.4(1.6)†	
	270.2(0.8)	269.8(0.8)	270.9(0.8)	267.6(0.7)	265.3(1.4)†	266.9(1.0)†	269.9(1.4)	L
Unknown	14.0(0.8)*	12.7(0.6)*	10.0(0.7)†	9.8(0.4)†	9.2(0.7)†	10.7(0.6)†	9.1(0.5)†	
	233.1(1.0)	234.8(1.1)	233.3(1.7)	236.5(1.3)	240.4(3.0)	237.7(1.9)	236.2(2.6)	L

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† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	88.4(1.3)	87.9(1.1)	89.1(2.5)	87.7(1.9)	86.4(1.9)	
	*****(0.0)	*****(0.0)	256.9(1.1)	255.2(0.6)	256.1(1.0)	255.0(0.8)	257.2(1.3)	N
Non-Public	*****(0.0)	*****(0.0)	11.6(1.3)	12.1(1.1)	10.9(2.5)	12.3(1.9)	13.6(1.9)	
	*****(0.0)	*****(0.0)	270.6(1.5)	271.2(1.7)	268.3(2.8)	269.7(2.9)	276.3(2.6)	N
QUARTILES								
Upper	25.0(0.9)	25.0(0.8)	25.0(0.8)	25.0(0.8)	25.0(0.9)	25.0(0.8)	25.0(1.2)	
	293.2(0.4)*	296.4(0.4)†*	294.1(0.5)*	296.2(0.5)†*	295.8(1.0)*	296.8(0.8)†*	303.1(1.1)†	LQ
Middle Two	50.0(0.6)	50.0(0.6)	50.0(0.6)	50.0(0.6)	50.0(0.7)	50.0(1.0)	50.0(1.1)	
	257.6(0.4)*	258.1(0.4)*	260.5(0.3)†	258.4(0.2)*	258.5(0.7)*	257.9(0.5)*	262.0(0.6)†	L
Lower	25.0(0.9)	25.0(0.8)	25.0(1.1)	25.0(0.7)	25.0(0.9)	25.0(0.9)	25.0(1.1)	
	212.4(0.7)	211.3(0.5)	218.7(0.7)†*	214.5(0.5)	217.2(1.0)†*	214.5(0.9)	212.2(1.4)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	285.2(1.2)*	285.6(0.8)*	285.5(1.2)*	288.8(0.6)†	290.1(1.0)†	290.2(1.1)†	289.7(1.1)†	L
SEX								
Male	49.2(0.5)*	48.8(0.5)*	50.5(0.6)	51.1(0.7)	47.7(1.3)*	50.3(0.6)	52.1(0.9)†	
	278.9(1.2)*	279.7(1.0)	281.8(1.3)	283.8(0.6)†	286.0(1.5)†	284.0(1.6)	284.2(1.6)†	L
Female	50.8(0.5)*	51.2(0.5)*	49.5(0.6)	48.9(0.7)	52.1(1.4)	49.7(0.6)	47.9(0.9)†	
	291.3(1.3)	291.2(1.0)*	289.2(1.2)*	293.9(0.8)	293.8(1.5)	296.5(1.2)†	295.7(1.1)	LQ
RACE/ETHNICITY								
White	87.1(1.3)*	84.3(1.0)*	83.1(1.6)*	77.4(0.6)†*	76.7(0.6)†	73.5(0.5)†	74.7(0.6)†	
	291.4(1.0)*	293.0(0.6)*	292.8(0.9)*	295.2(0.7)†	294.7(1.2)	296.6(1.2)†	297.4(1.4)†	L
Black	11.4(1.2)*	11.0(0.8)*	12.0(1.4)	14.1(0.2)	15.2(0.3)†	15.9(0.3)†*	14.7(0.3)†	
	238.7(1.7)*	240.6(2.0)*	243.1(1.8)*	264.3(1.0)†	274.4(2.4)†*	267.3(2.3)†	260.6(2.1)†	LQ
Hispanic	*****(0.0)	3.4(0.6)*	3.9(0.6)*	6.6(0.7)†	5.8(0.5)†	7.0(0.4)†	7.5(0.6)†	
	*****(0.0)	252.4(3.6)*	261.4(2.7)	268.1(2.2)†	270.8(4.3)†	274.8(3.6)†	271.2(3.7)†	L
Other	1.5(0.4)*	1.4(0.4)*	1.1(0.2)*	1.9(0.1)*	2.3(0.3)	3.6(0.5)†	2.9(0.3)†	
	275.9(4.8)	274.3(4.4)	280.4(3.0)	284.7(3.1)	290.0(5.3)	290.1(3.5)	287.0(5.8)	L
GRADE								
Below Modal Grade	14.1(0.6)*	15.1(0.7)*	13.9(0.7)*	22.2(0.7)†*	23.6(1.2)†*	26.2(0.6)†	28.4(0.6)†	
	238.4(1.5)*	242.1(1.8)*	244.3(2.1)*	258.9(0.9)†	265.4(1.9)†	261.4(1.9)†	261.4(1.5)†	L
At Modal Grade	72.9(0.7)*	73.0(0.7)*	77.0(0.6)†*	67.7(0.2)†*	64.9(0.2)†*	65.2(0.2)†*	63.9(0.2)†	
	291.1(1.0)*	292.1(0.7)*	291.2(1.0)*	295.6(0.6)†*	296.5(1.1)†*	299.2(1.0)†	301.1(1.3)†	LQ
Above Modal Grade	13.0(0.7)*	11.6(0.4)*	9.1(0.6)†	10.0(0.7)†	11.6(1.3)*	8.7(0.6)†	7.7(0.6)†	
	302.5(1.6)	301.5(1.0)	300.5(1.7)	303.8(1.2)	304.6(3.0)	309.7(2.3)	300.0(3.2)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
REGION								
Northeast	26.2(1.9)	25.5(1.2)	22.0(2.9)	24.3(0.4)*	22.7(0.8)	22.6(1.1)	21.7(0.9)	
	291.3(2.8)	289.1(1.7)	285.9(2.4)*	292.2(1.9)	294.8(2.9)	295.7(1.8)	297.3(3.2)	LQ
Southeast	20.0(1.8)	19.6(0.8)*	21.4(1.9)	22.2(1.8)	22.9(1.0)	23.2(0.9)	24.8(1.4)	
	270.5(2.4)	276.5(1.4)	280.1(2.2)†	284.7(1.6)†	285.5(2.1)†	285.1(2.5)†	278.4(2.9)	LQ
Central	29.9(2.4)	30.1(1.2)*	28.4(3.2)	27.1(1.7)	26.3(1.8)	26.6(1.0)	24.5(0.8)	
	290.7(2.1)	291.8(1.4)	287.4(2.2)	290.0(1.4)	291.2(1.9)	293.5(2.4)	293.8(2.1)	N
West	23.9(2.4)	24.9(1.1)*	28.2(2.3)	26.3(0.6)	28.1(1.1)	27.6(0.9)	29.0(1.0)	
	283.7(1.8)	281.6(1.9)*	287.3(2.1)	288.4(1.1)	289.0(1.8)	286.8(2.6)	290.4(2.3)	L
TYPE OF COMMUNITY								
Extreme Rural	8.9(1.4)	8.7(1.4)	8.1(1.6)	5.1(1.1)	7.0(2.7)	12.6(2.0)	10.5(2.2)	
	276.8(3.4)	282.0(2.6)	279.0(3.2)	282.7(3.2)	286.6(5.2)	289.9(3.4)†	285.3(2.6)	L
Disadvantaged Urban	8.4(1.7)	11.3(1.5)	9.4(2.0)	10.2(2.2)	0.8(0.6)†*	8.4(2.1)	11.8(1.8)	
	259.7(2.6)	258.8(4.2)	258.1(3.0)	265.7(2.1)	275.0(2.6)†	273.3(4.8)	266.7(3.2)	L
Advantaged Urban	13.9(2.6)	10.1(1.3)	15.2(3.4)	16.1(2.7)	16.0(4.0)	10.4(1.6)	9.7(1.8)	
	305.9(2.0)	305.3(1.5)	300.8(2.2)	302.2(2.2)	301.0(1.8)	299.9(3.8)	302.6(3.9)	N
Other	66.8(2.8)	69.9(2.3)	67.3(3.9)	68.7(3.4)	76.2(4.7)	68.7(3.3)	67.9(3.2)	
	285.2(1.0)*	287.5(0.9)*	286.6(1.0)*	289.6(0.6)†	288.3(1.1)	290.9(1.2)†	292.6(1.3)†	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	19.8(0.8)*	16.0(0.6)†*	12.8(0.7)†*	11.5(0.6)†*	8.9(0.8)†	8.8(0.6)†	8.1(0.8)†	
	261.3(1.5)	262.5(1.3)	262.1(1.5)	269.4(1.1)†	267.4(2.0)	269.7(2.8)†	270.8(3.9)	L
Graduated H.S.	31.1(0.8)	33.6(0.5)*	32.3(0.9)*	34.8(1.1)†*	30.2(1.2)	29.8(1.0)	28.3(0.9)	
	283.0(1.2)	281.4(1.1)	277.5(1.0)†	281.2(0.7)	282.0(1.3)	282.9(1.4)	280.5(1.6)	N
Post H.S.	41.9(1.3)*	46.4(0.8)†*	51.3(1.3)†*	49.5(1.2)†*	58.2(1.6)†	57.9(1.3)†	60.5(1.4)†	
	302.2(1.0)	300.6(0.7)	298.9(1.0)	301.2(0.7)	299.5(1.3)	299.9(1.1)	298.6(1.4)	L
Unknown	7.2(0.8)*	4.0(0.2)†*	3.6(0.4)†	3.3(0.2)†	2.4(0.3)†	3.2(0.3)†	2.9(0.3)†	
	261.1(5.0)	239.8(2.8)†	249.8(3.5)	256.5(2.0)	254.7(6.2)	245.9(5.7)	254.7(5.9)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages and reading proficiency means and jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	92.6(1.2)	88.9(1.7)	87.6(3.5)	92.9(1.5)	90.7(2.2)	
	*****(0.0)	*****(0.0)	284.4(1.2)	287.2(0.6)	288.7(1.0)†	288.6(1.1)†	287.8(1.0)	L
Non-Public	*****(0.0)	*****(0.0)	7.4(1.2)	11.1(1.7)	12.4(3.5)	7.1(1.5)	8.1(1.9)	
	*****(0.0)	*****(0.0)	298.4(2.7)	303.0(2.0)	299.6(3.8)	311.0(4.2)†	309.6(4.2)	L
QUARTILES								
Upper	25.0(1.0)	25.0(0.6)	25.0(1.0)	25.0(0.8)	25.0(1.0)	25.0(0.8)	25.0(0.9)	
	332.5(0.6)	334.0(0.5)	326.8(0.8)†*	331.4(0.5)*	330.1(1.3)*	335.5(1.1)	335.3(0.9)	LQ
Middle Two	50.0(0.6)	50.0(0.6)	50.0(0.8)	50.0(0.5)	50.0(1.1)	50.0(0.8)	50.1(0.9)	
	289.0(0.5)*	288.4(0.4)*	288.7(0.4)*	290.7(0.3)†*	292.1(0.7)†	292.1(0.5)†	293.3(0.7)†	LQ
Lower	25.0(1.0)	25.0(0.7)	25.0(1.1)	25.0(0.8)	25.0(1.2)	25.0(1.0)	24.9(1.0)	
	230.2(0.8)*	231.5(1.0)*	237.6(1.0)†	240.8(0.3)†*	246.0(1.1)†*	241.1(1.6)†	236.9(1.3)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 150

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	90.6(0.5)	93.1(0.4)†	94.6(0.4)†*	92.3(0.3)†	92.7(0.7)	90.1(0.9)	92.3(0.4)	Q
SEX								
Male	87.9(0.7)	91.0(0.5)†	92.9(0.5)†*	90.4(0.5)†	90.4(0.9)	87.9(1.4)	90.2(0.8)	Q
Female	93.2(0.5)	95.3(0.3)†	96.4(0.4)†*	94.2(0.4)	94.9(1.0)	92.4(1.1)	94.4(0.6)	Q
RACE/ETHNICITY								
White	94.0(0.4)*	96.0(0.3)†	97.1(0.2)†	95.4(0.3)†	95.1(0.7)	93.5(0.9)	95.8(0.5)†	Q
Black	69.7(1.7)*	80.7(1.1)†	84.9(1.4)†	81.3(1.0)†	83.2(2.4)†	76.9(2.7)	79.6(2.2)†	LQ
Hispanic	*****(0.0)	80.8(2.5)	84.5(1.8)	82.0(2.1)	85.6(3.5)	83.7(1.8)	83.4(2.6)	N
Other	86.0(1.9)	92.4(1.9)	96.1(1.2)†	95.4(1.1)†	96.9(1.8)†	89.3(3.1)	90.8(2.9)	Q
GRADE								
Below Modal Grade	75.6(1.3)*	81.2(1.1)†*	84.4(1.0)†	82.1(0.7)†*	85.0(1.9)†	82.2(1.9)†	85.4(0.9)†	LQ
At Modal Grade	95.4(0.4)*	96.8(0.3)†	98.6(0.2)†*	97.4(0.2)†	97.1(0.7)	95.8(0.6)	97.4(0.4)†	Q
Above Modal Grade	98.0(1.3)	98.8(1.4)	97.5(1.6)	100.0(0.0)	99.1(5.2)	98.3(0.0)	100.0(0.0)	N
REGION								
Northeast	93.4(0.9)	94.1(0.5)	96.4(0.7)†	94.2(0.6)	92.8(1.3)	92.6(1.6)	94.8(0.9)	N
Southeast	82.7(1.9)	89.8(0.8)†	93.0(0.9)†*	89.7(0.8)†	91.3(1.7)†	84.5(2.4)	87.1(1.1)	Q
Central	93.6(0.5)	95.6(0.5)†	95.8(0.7)	94.3(0.6)	95.4(0.7)	92.7(1.4)	95.1(0.9)	N
West	91.0(1.1)	92.4(1.0)	93.6(0.8)	90.9(0.9)	91.5(1.6)	90.6(1.3)	91.8(1.3)	N
TYPE OF COMMUNITY								
Extreme Rural	86.5(1.9)	90.2(1.5)	94.4(1.1)†	87.5(2.1)	92.9(3.4)	89.3(2.6)	93.1(1.8)	N
Disadvantaged Urban	75.8(2.4)	81.4(1.7)	83.4(2.1)	84.0(1.3)†	84.0(4.0)	78.9(3.2)	77.3(2.9)	Q
Advantaged Urban	97.8(0.4)	98.2(0.4)	98.9(0.3)	98.1(0.4)	97.2(1.0)	97.0(1.1)	98.7(0.5)	N
Other	91.4(0.6)	94.0(0.4)†	94.8(0.5)†	93.2(0.4)	92.5(1.0)	90.8(1.1)	93.3(0.5)	Q
PARENTS' EDUCATION LEVEL								
Less Than H.S.	82.3(1.4)	84.4(1.2)	85.6(1.5)	86.2(1.3)	84.4(4.4)	83.0(3.8)	86.4(5.4)	N
Graduated H.S.	92.1(0.7)	94.2(0.5)	94.9(0.6)†	92.8(0.7)	92.3(2.1)	91.2(1.3)	91.4(1.6)	Q
Post H.S.	96.1(0.4)	96.5(0.4)*	97.3(0.4)*	95.4(0.4)	95.1(0.8)	92.6(1.2)†	94.8(0.5)	LQ
Unknown	86.7(0.7)*	91.5(0.5)†	92.7(0.9)†	91.0(0.4)†	90.9(1.2)†	87.6(1.4)	91.3(0.8)†	Q
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	94.2(0.4)*	91.7(0.4)†	92.1(0.8)	89.6(1.0)†	91.5(0.5)†	LQ
Non-Public	*****(0.0)	*****(0.0)	98.1(0.4)	96.8(0.5)	96.7(1.3)	96.2(1.7)	97.9(1.2)	N
QUARTILES								
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.6(0.1)	100.0(0.0)†	99.9(0.1)	99.9(0.1)	99.7(0.2)	99.1(0.5)	99.6(0.1)	N
Lower	63.1(1.1)*	72.6(1.0)†	78.7(1.2)†*	69.7(0.9)†	71.3(2.3)†	62.2(3.0)	69.9(1.4)†	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 200

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	58.7(1.0)	62.1(0.8)†	67.7(1.0)†*	61.5(0.7)	62.6(1.3)	58.9(1.3)	62.0(1.1)	Q
SEX								
Male	52.7(1.2)	56.2(1.0)	62.7(1.1)†*	58.0(0.9)†	58.4(1.8)†	53.8(1.9)	56.9(1.6)	Q
Female	64.6(1.1)	68.1(0.8)	72.7(1.0)†*	65.2(0.8)	66.9(1.4)	64.2(1.2)	67.3(1.2)	Q
RACE/ETHNICITY								
White	65.0(1.0)*	69.0(0.8)†	74.2(0.7)†*	68.6(0.8)†	68.4(1.6)	66.0(1.4)	69.3(1.2)†	Q
Black	22.0(1.5)*	31.6(1.5)†	41.3(1.9)†	36.6(1.5)†	39.4(2.9)†	33.9(3.4)†	36.6(2.2)†	LQ
Hispanic	*****(0.0)	34.6(3.0)	41.6(2.6)	39.6(2.2)	45.9(3.3)	40.9(2.7)	43.1(3.5)	L
Other	42.0(5.2)	58.8(5.3)	72.9(3.7)†	72.7(2.9)†	77.1(4.8)†	56.8(4.5)	59.7(4.9)	LQ
GRADE								
Below Modal Grade	28.8(1.4)*	33.8(1.2)†*	40.4(1.5)†	38.0(1.0)†*	43.4(2.1)†	40.1(1.8)†	43.5(1.8)†	LQ
At Modal Grade	68.1(1.1)*	70.7(0.7)*	78.3(0.8)†	73.5(0.7)†	73.7(1.5)†	72.5(1.6)	76.0(0.9)†	LQ
Above Modal Grade	81.0(4.8)	79.8(4.7)	88.5(5.4)	93.4(3.8)	94.3(6.1)	80.9(19.5)	88.5(0.0)	N
REGION								
Northeast	64.1(1.6)	66.8(1.5)	73.5(2.1)†	66.5(1.5)	65.7(2.5)	65.4(2.8)	69.3(2.8)	N
Southeast	45.9(2.8)	53.1(1.2)	62.6(2.4)†*	54.8(1.6)†	58.0(2.6)†	48.2(3.3)	50.6(1.9)	Q
Central	65.7(1.4)	67.4(1.3)	69.4(1.2)	66.0(1.6)	68.4(1.7)	62.6(2.0)	67.7(1.9)	N
West	55.6(1.8)	59.5(2.1)	65.9(1.5)†	58.9(1.5)	59.5(3.5)	59.6(2.9)	60.4(3.0)	Q
TYPE OF COMMUNITY								
Extreme Rural	51.2(3.2)	56.3(2.7)	64.4(2.0)†	53.2(3.0)	64.5(4.1)	59.1(4.4)	56.2(3.0)	Q
Disadvantaged Urban	30.9(2.8)	34.6(2.9)	39.7(2.0)	42.5(1.8)†	43.3(5.7)	37.5(6.3)	35.9(3.9)	Q
Advantaged Urban	79.0(1.4)	79.5(1.6)	84.0(1.2)†	80.3(1.7)	72.9(3.2)*	74.4(3.4)	84.9(2.2)	N
Other	59.2(1.1)	63.1(0.9)†	67.4(1.0)†	62.2(0.9)	62.1(1.8)	59.6(1.4)	63.3(1.4)	Q
PARENTS' EDUCATION LEVEL								
Less Than H.S.	39.4(1.7)	41.8(1.4)	47.5(1.6)†	47.4(2.1)†	44.0(7.1)	42.8(4.1)	46.4(4.5)	N
Graduated H.S.	59.6(1.3)	64.1(1.0)†	66.5(1.3)†	60.0(1.3)	62.7(3.4)	59.4(2.9)	60.4(2.4)	Q
Post H.S.	73.7(1.1)	73.3(1.0)	77.8(1.1)†*	71.9(0.9)	69.7(1.3)	65.9(2.0)†	70.7(1.5)	LQ
Unknown	49.3(1.2)	55.1(1.0)†	59.0(1.1)†	55.9(1.0)†	56.1(1.9)†	52.7(1.9)	55.2(1.9)	Q
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	66.2(1.0)*	60.0(0.8)†	61.1(1.5)†	57.5(1.5)†	60.0(1.1)†	LQ
Non-Public	*****(0.0)	*****(0.0)	79.3(1.8)	73.9(1.7)	73.5(2.5)	74.8(3.0)	77.1(2.5)	Q
QUARTILES								
Upper	98.7(0.3)*	99.2(0.2)	99.6(0.2)	99.8(0.1)†	99.7(0.3)	99.7(0.3)	99.9(0.2)†	L
Middle Two	66.4(1.0)*	72.8(0.5)†	80.6(0.6)†*	70.2(0.6)†	72.4(1.1)†	65.8(1.3)*	71.4(1.4)†	Q
Lower	3.0(0.5)	3.8(0.4)	9.9(0.9)†*	5.0(0.4)†	6.0(1.2)	4.3(1.1)	5.4(0.9)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 250

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	15.6(0.6)	14.6(0.6)	17.7(0.8)	17.2(0.6)	17.5(1.1)	18.4(1.0)	15.2(0.8)	L
SEX								
Male	12.0(0.6)	11.5(0.6)	14.6(0.9)	15.9(0.7)†	15.8(1.4)	16.1(1.2)†	14.2(1.0)	LQ
Female	19.2(0.8)	17.7(0.8)	20.7(1.0)	18.4(0.7)	19.1(1.2)	20.8(1.2)	18.2(1.1)	N
RACE/ETHNICITY								
White	18.0(0.7)	17.4(0.7)	21.0(0.9)†	20.9(0.7)†	20.3(1.5)	22.6(1.2)†	19.6(1.0)	L
Black	1.6(0.5)*	2.0(0.3)*	4.1(0.6)†	4.5(0.5)†	5.6(1.2)†	5.2(1.5)	4.6(0.8)†	L
Hispanic	*****(0.0)	2.6(0.5)	5.0(1.4)	4.3(0.6)	8.6(2.3)	5.8(2.0)	7.2(2.3)	L
Other	8.7(2.1)	14.5(3.5)	18.7(4.3)	24.7(2.6)†*	29.8(6.9)†	13.1(3.9)	12.9(2.6)	Q
GRADE								
Below Modal Grade	2.7(0.3)*	2.7(0.4)*	4.1(0.5)*	5.2(0.5)†	7.4(0.8)†	7.1(0.9)†	6.6(0.7)†	L
At Modal Grade	19.6(0.7)*	18.2(0.7)*	22.9(0.9)†	23.2(0.8)†	23.0(1.8)	26.5(1.4)†	23.3(1.2)†	L
Above Modal Grade	34.2(5.4)	22.3(6.7)	46.7(10.3)	53.2(8.7)	60.4(15.7)	41.6(26.2)	51.8(26.5)	N
REGION								
Northeast	17.9(0.9)	17.7(1.0)	21.6(2.2)	19.8(1.3)	20.8(1.9)	23.9(1.9)†	20.2(2.1)	L
Southeast	10.2(1.1)	9.9(0.8)	15.3(1.5)†	13.8(0.9)	14.7(1.4)	12.8(2.7)	11.7(1.6)	Q
Central	19.7(0.9)	17.2(1.2)	17.9(1.1)	19.2(1.3)	20.7(3.2)	19.3(2.0)	17.6(1.3)	N
West	13.0(1.4)	12.7(1.2)	16.4(1.5)	15.9(1.0)	14.5(1.1)	18.1(2.1)	15.6(1.9)	L
TYPE OF COMMUNITY								
Extreme Rural	12.4(1.6)	12.0(1.6)	14.8(1.5)	11.3(1.5)	18.9(4.8)	19.6(3.7)	12.4(2.3)	N
Disadvantaged Urban	3.7(0.7)	3.7(0.8)	4.2(0.7)	8.1(0.9)†	7.9(2.2)	6.7(2.0)	5.3(1.5)	L
Advantaged Urban	30.3(1.3)	25.7(1.5)	31.1(2.3)	30.9(1.8)	22.0(3.0)	29.0(3.5)	31.0(3.4)	N
Other	14.9(0.7)	14.4(0.7)	16.6(0.7)	16.5(0.6)	17.2(1.1)	18.3(1.1)†	16.2(1.0)	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	6.1(0.8)	5.2(0.7)	6.7(1.0)	6.6(0.7)	6.3(2.1)	9.1(2.2)	7.8(2.6)	N
Graduated H.S.	13.7(0.8)	14.0(0.9)	15.0(1.1)	14.3(0.9)	16.8(2.0)	17.2(1.4)	13.0(2.0)	N
Post H.S.	26.1(1.1)	22.3(0.9)	25.9(1.1)	26.3(0.8)	22.8(1.6)	24.3(1.7)	22.2(1.3)	N
Unknown	9.6(0.5)	9.7(0.6)	11.0(0.8)	11.8(0.6)†	12.3(1.3)	13.2(1.5)	11.4(1.0)	L
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	16.7(0.9)	16.3(0.6)	16.6(0.9)	17.2(1.0)	15.3(0.9)	N
Non-Public	*****(0.0)	*****(0.0)	25.6(1.7)	23.6(1.7)	23.6(3.5)	32.4(4.3)	22.6(2.2)	N
QUARTILES								
Upper	52.6(0.9)*	50.5(1.6)*	58.1(1.7)†	61.0(1.0)†	63.1(3.2)†	66.0(1.9)†	59.4(2.2)†	L
Middle Two	5.0(0.3)*	3.9(0.3)	6.3(0.4)†*	3.6(0.3)†	3.3(0.6)	3.8(0.5)	2.7(0.4)†	LQ
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.2)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 300

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	0.9(0.1)	0.6(0.1)	0.6(0.1)	1.0(0.1)	1.4(0.3)	1.7(0.3)*	0.7(0.2)	L
SEX								
Male	0.6(0.2)	0.3(0.1)	0.4(0.1)	0.8(0.2)	1.1(0.4)	1.4(0.3)	0.5(0.2)	L
Female	1.3(0.2)	0.9(0.2)	0.8(0.1)	1.1(0.1)	1.6(0.4)	2.0(0.5)	0.8(0.3)	N
RACE/ETHNICITY								
White	1.1(0.2)	0.7(0.1)	0.8(0.1)	1.2(0.2)	1.6(0.3)	2.2(0.4)*	0.9(0.2)	L
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.2(0.2)	0.3(0.2)	0.0(0.0)	N
Hispanic	*****(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.4(0.0)	0.2(0.3)	0.0(0.2)	N
Other	0.5(0.5)	0.9(0.9)	0.5(0.0)	1.9(0.6)	4.0(2.7)	0.7(0.8)	0.2(0.4)	Q
GRADE								
Below Modal Grade	0.0(0.0)	0.1(0.1)	0.1(0.0)	0.1(0.0)	0.3(0.2)	0.3(0.2)	0.0(0.1)	N
At Modal Grade	1.2(0.2)	0.8(0.1)	0.8(0.1)	1.4(0.2)	1.8(0.4)	2.7(0.5)†	1.1(0.3)	L
Above Modal Grade	1.7(1.9)	0.7(1.2)	5.0(5.0)	8.3(3.3)	20.1(15.1)	3.1(0.0)	2.0(0.0)	N
REGION								
Northeast	1.1(0.3)	0.9(0.3)	0.8(0.2)	1.4(0.3)	1.7(0.4)	2.7(0.7)	0.8(0.4)	N
Southeast	0.4(0.2)	0.3(0.2)	0.6(0.3)	0.6(0.2)	0.8(0.4)	1.0(0.5)	0.5(0.4)	N
Central	1.3(0.3)	0.7(0.2)	0.6(0.2)	1.1(0.2)	1.9(1.1)	1.6(0.5)	0.9(0.3)	N
West	0.7(0.2)	0.4(0.2)	0.5(0.2)	0.8(0.2)	1.1(0.4)	1.6(0.4)	0.5(0.3)	N
TYPE OF COMMUNITY								
Extreme Rural	0.8(0.2)	0.4(0.2)	0.4(0.2)	0.5(0.3)	1.6(1.2)	1.5(0.8)	0.6(0.4)	N
Disadvantaged Urban	0.1(0.1)	0.1(0.0)	0.1(0.1)	0.3(0.2)	0.4(0.0)†	0.7(0.5)	0.0(0.0)	N
Advantaged Urban	2.7(0.7)	1.5(0.4)	1.7(0.4)	2.6(0.6)	2.0(0.9)	3.8(0.8)	1.8(0.7)	N
Other	0.7(0.1)	0.5(0.1)	0.5(0.1)	0.8(0.1)	1.3(0.3)	1.5(0.4)	0.6(0.2)	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	0.2(0.1)	0.1(0.1)	0.1(0.1)	0.2(0.6)	0.0(0.0)	0.5(0.7)	0.0(0.0)	N
Graduated H.S.	0.6(0.2)	0.5(0.2)	0.4(0.1)	0.6(0.2)	0.9(0.8)	1.3(0.7)	0.6(0.4)	N
Post H.S.	2.0(0.3)	1.2(0.2)	1.1(0.2)	2.0(0.3)	2.2(0.7)	2.7(0.6)	1.1(0.3)	N
Unknown	0.4(0.1)	0.2(0.1)	0.3(0.1)	0.4(0.1)	0.6(0.3)	0.8(0.4)	0.2(0.1)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	0.6(0.1)	0.9(0.1)	1.2(0.3)	1.6(0.3)†*	0.6(0.2)	LQ
Non-Public	*****(0.0)	*****(0.0)	1.1(0.5)	1.4(0.4)	2.4(1.1)	2.6(1.1)	1.0(0.6)	N
QUARTILES								
Upper	3.7(0.5)	2.4(0.3)	2.5(0.4)	3.9(0.5)	5.4(1.3)	6.7(1.2)*	2.7(0.7)	L
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 350

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
SEX								
Male	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Female	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.1(0.1)	0.0(0.0)	
RACE/ETHNICITY								
White	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Hispanic	******(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
GRADE								
Below Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
At Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.1(0.1)	0.0(0.0)	N
Above Modal Grade	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.5(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
REGION								
Northeast	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Southeast	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.1)	0.0(0.0)	N
Central	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
West	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
TYPE OF COMMUNITY								
Extreme Rural	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.0(0.0)	0.0(0.0)	N
Disadvantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Advantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.2)	0.0(0.2)	0.1(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
PARENTS' EDUCATION LEVEL								
Less Than H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.0)†	0.0(0.0)	0.0(0.0)	N
Post H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.1(0.1)	0.0(0.0)	N
Unknown	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
TYPE OF SCHOOL								
Public	******(0.0)	******(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Non-Public	******(0.0)	******(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
QUARTILES								
Upper	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.1(0.2)	0.0(0.0)	N
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 150

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	99.8(0.0)	99.7(0.1)	99.9(0.1)	99.8(0.0)	99.9(0.1)	99.8(0.1)	99.5(0.3)	N
SEX								
Male	99.6(0.1)	99.6(0.1)	99.8(0.1)	99.7(0.1)	99.7(0.2)	99.7(0.2)	99.2(0.4)	N
Female	99.9(0.1)	99.9(0.1)	99.9(0.0)	99.9(0.1)	100.0(0.0)	99.9(0.1)	99.8(0.2)	N
RACE/ETHNICITY								
White	99.9(0.0)	99.9(0.0)	100.0(0.0)	99.9(0.0)	99.9(0.1)	99.9(0.1)	99.8(0.1)	N
Black	98.6(0.3)	98.4(0.3)	99.3(0.3)	99.4(0.2)	99.8(0.3)†	99.4(0.5)	98.7(1.0)	N
Hispanic	*****(0.0)	99.6(0.3)	99.7(0.3)	99.5(0.4)	99.2(0.8)	99.1(0.5)	98.1(2.2)	N
Other	99.8(0.3)	99.5(0.0)	99.9(0.4)	99.8(0.0)	100.0(0.0)	100.0(0.0)	99.8(0.0)	N
GRADE								
Below Modal Grade	99.2(0.2)	99.0(0.2)	99.6(0.2)	99.5(0.1)	99.7(0.2)	99.5(0.3)	98.9(0.6)	N
At Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.1)	N
Above Modal Grade	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
REGION								
Northeast	99.9(0.1)	99.8(0.1)	99.9(0.1)	99.9(0.1)	99.9(0.2)	99.9(0.1)	99.4(0.8)	N
Southeast	99.4(0.2)	99.6(0.1)	99.7(0.1)	99.8(0.1)	99.9(0.0)†	99.6(0.3)	99.1(0.6)	N
Central	99.9(0.1)	99.8(0.1)	100.0(0.1)	99.9(0.1)	99.9(0.0)	99.9(0.1)	99.9(0.0)	N
West	99.8(0.1)	99.6(0.2)	99.9(0.1)	99.7(0.1)	99.8(0.3)	99.7(0.2)	99.5(0.3)	N
TYPE OF COMMUNITY								
Extreme Rural	99.5(0.3)	99.5(0.3)	99.9(0.1)	99.8(0.2)	100.0(0.0)	99.6(0.0)	99.7(0.0)	N
Disadvantaged Urban	99.3(0.3)	98.8(0.4)	99.6(0.3)	99.5(0.2)	99.5(0.7)	99.1(0.5)	97.9(1.9)	N
Advantaged Urban	100.0(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	N
Other	99.8(0.0)	99.8(0.0)	99.9(0.1)	99.8(0.1)	99.9(0.1)	99.9(0.1)	99.6(0.2)	N
PARENTS' EDUCATION LEVEL								
Less Than H.S.	99.5(0.2)	99.4(0.2)	99.7(0.2)	99.5(0.2)	99.9(0.0)	99.5(0.4)	99.4(0.0)	N
Graduated H.S.	99.9(0.0)	99.8(0.1)	99.9(0.0)	99.8(0.1)	99.8(0.2)	99.9(0.2)	99.4(0.6)	N
Post H.S.	100.0(0.0)	99.9(0.0)	100.0(0.0)	99.9(0.0)	100.0(0.1)	99.9(0.1)	99.8(0.2)	N
Unknown	99.2(0.2)	99.1(0.3)	99.3(0.4)	99.5(0.2)	99.5(0.5)	99.1(0.6)	98.2(1.2)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	99.9(0.1)	99.8(0.1)	99.8(0.1)	99.7(0.1)	99.4(0.3)	N
Non-Public	*****(0.0)	*****(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES								
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	99.0(0.2)	98.8(0.2)	99.5(0.2)	99.3(0.2)	99.4(0.4)	99.1(0.4)	98.0(1.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 200

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	93.0(0.5)	93.2(0.4)	94.8(0.4)†	93.9(0.3)	94.9(0.6)	93.8(0.6)	92.7(0.7)	Q
SEX								
Male	90.7(0.7)	90.9(0.5)	93.4(0.6)†	92.2(0.4)	92.8(1.0)	91.4(0.9)	90.4(1.1)	Q
Female	95.2(0.4)	95.5(0.4)	96.1(0.4)	95.8(0.3)	96.9(0.6)	96.3(0.6)	95.0(0.7)	N
RACE/ETHNICITY								
White	96.2(0.3)	96.4(0.2)	97.1(0.2)	96.2(0.3)	96.0(0.6)	96.0(0.6)	95.9(0.6)	N
Black	74.2(1.7)	76.9(1.3)	84.1(1.7)†	85.5(1.0)†	91.3(2.2)†*	87.7(2.3)†	82.0(2.7)	LQ
Hispanic	*****(0.0)	81.3(2.3)	86.8(2.4)	86.7(1.5)	87.4(2.6)	85.8(2.4)	83.4(3.5)	N
Other	92.3(2.2)	93.3(2.0)	93.4(2.6)	95.1(1.3)	99.0(1.4)	93.3(4.2)	94.8(2.0)	N
GRADE								
Below Modal Grade	81.3(1.1)	82.1(0.9)	87.3(1.2)†	87.0(0.6)†	90.0(1.1)†	88.3(1.3)†	85.7(1.6)	LQ
At Modal Grade	97.4(0.3)	97.4(0.2)	97.7(0.3)	97.7(0.2)	97.9(0.5)	97.4(0.3)	98.0(0.3)	N
Above Modal Grade	98.6(1.2)	96.2(3.7)	98.8(2.3)	100.0(0.0)	96.7(6.2)	100.0(0.0)	100.0(0.0)	N
REGION								
Northeast	95.2(0.8)	94.0(0.7)	95.6(0.8)	95.4(0.3)	95.1(1.3)	95.1(1.1)	92.8(2.0)	N
Southeast	87.2(1.4)	89.9(1.0)	92.0(0.8)†	92.8(0.6)†	95.9(1.1)†	92.8(2.0)	90.1(1.9)	LQ
Central	95.4(0.7)	95.8(0.4)	97.1(0.6)	95.5(0.5)	94.6(1.2)	95.0(0.8)	94.7(1.5)	N
West	93.4(0.8)	92.4(1.0)	94.2(1.1)	92.6(0.7)	94.0(1.2)	92.7(0.9)	92.9(0.9)	N
TYPE OF COMMUNITY								
Extreme Rural	88.1(2.6)	91.0(1.4)	93.6(1.1)	94.1(1.1)	96.8(1.7)†	90.9(3.5)	94.2(2.2)	N
Disadvantaged Urban	82.7(1.6)	78.7(2.4)	87.6(2.1)	86.6(1.6)	89.0(1.9)	87.2(1.9)	75.6(5.0)	Q
Advantaged Urban	98.6(0.3)	98.5(0.5)	98.9(0.3)	98.6(0.3)	97.0(1.2)	97.9(1.3)	98.7(0.9)	N
Other	93.7(0.5)	94.2(0.4)	95.1(0.5)	94.1(0.3)	94.9(0.7)	94.4(0.7)	94.2(0.7)	N
PARENTS' EDUCATION LEVEL								
Less Than H.S.	86.6(1.3)	85.7(1.0)	87.8(1.1)	88.0(0.9)	93.3(2.0)†	88.3(2.6)	87.8(2.9)	N
Graduated H.S.	94.9(0.5)	94.6(0.4)	95.1(0.5)	93.9(0.5)	95.0(0.8)	93.7(0.9)	91.1(1.6)	L
Post H.S.	98.0(0.2)*	97.7(0.3)*	98.2(0.3)*	97.1(0.2)†	96.5(0.6)	96.6(0.6)	96.1(0.5)†	L
Unknown	82.2(1.2)	83.3(1.0)	83.9(1.5)	84.3(1.0)	87.5(2.9)	86.3(2.9)	81.1(3.1)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	94.3(0.5)*	93.4(0.3)	94.5(0.6)*	93.2(0.7)	91.8(0.8)†	L
Non-Public	*****(0.0)	*****(0.0)	98.5(0.5)	98.3(0.4)	97.8(1.0)	98.6(0.5)	98.4(0.8)	N
QUARTILES								
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	99.8(0.1)	100.0(0.0)	99.8(0.1)	99.9(0.1)	99.9(0.1)	99.9(0.1)	99.9(0.1)	N
Lower	72.3(1.2)	72.7(1.0)	79.5(1.1)†*	75.2(0.7)	79.6(1.9)†*	75.6(1.9)	71.0(2.3)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment -- Age 13

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 250

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	57.8(1.1)	58.6(1.0)	60.7(1.1)	59.0(0.6)	58.7(1.3)	58.7(1.0)	61.6(1.4)	N
SEX								
Male	51.6(1.2)	51.7(1.1)	55.9(1.2)	54.0(0.8)	52.3(1.9)	52.4(1.5)	55.5(2.0)	N
Female	64.0(1.1)	65.5(1.2)	65.4(1.1)	64.0(0.7)	65.0(1.4)	65.0(1.5)	67.5(1.4)	N
RACE/ETHNICITY								
White	64.2(0.9)	65.5(0.9)	67.8(0.8)†	65.3(0.7)	63.7(1.5)	64.8(1.2)	68.5(1.4)	N
Black	21.1(1.2)*	24.8(1.6)*	30.1(2.0)†	34.6(1.2)†	40.2(2.3)†	41.7(3.5)†	38.4(2.7)†	L
Hispanic	*****(0.0)	32.0(3.6)	35.4(2.6)	39.0(2.1)	38.0(4.4)	37.2(2.9)	40.9(5.1)	N
Other	51.3(4.6)*	55.8(4.4)	55.5(7.5)	63.8(3.8)	66.9(6.1)	52.6(7.9)	68.2(4.0)†	L
GRADE								
Below Modal Grade	27.1(1.1)*	31.2(1.2)†*	38.7(1.7)†	38.5(1.0)†	41.0(1.8)†	42.9(1.7)†	44.3(2.2)†	L
At Modal Grade	69.4(1.0)*	68.9(0.9)*	69.6(1.1)	70.1(0.6)*	70.0(1.5)	68.8(1.2)*	74.3(1.5)†	L
Above Modal Grade	84.2(2.8)*	79.4(5.1)*	79.0(6.3)	84.1(6.7)	64.2(9.0)*	83.0(13.1)	96.7(3.1)†	Q
REGION								
Northeast	64.6(2.3)	62.1(2.2)	62.6(2.1)	63.2(1.1)	59.2(2.5)	60.8(2.6)	65.9(3.1)	N
Southeast	46.3(2.0)	50.8(1.7)	54.5(1.9)†	57.9(1.7)†	57.7(3.5)†	57.3(2.4)†	55.7(3.1)	LQ
Central	63.3(2.3)	64.7(1.8)	67.2(2.0)	60.8(1.4)	57.9(2.3)	59.4(2.4)	65.5(2.9)	N
West	55.7(1.7)	55.2(2.1)	58.2(2.2)	55.3(0.8)	59.9(2.8)	57.5(2.0)	59.5(2.2)	N
TYPE OF COMMUNITY								
Extreme Rural	50.1(3.3)	49.6(2.4)	57.1(2.3)	56.5(3.0)	64.2(4.9)	53.1(6.0)	59.4(4.8)	L
Disadvantaged Urban	33.1(2.0)	30.5(3.0)	40.9(4.8)	38.0(2.2)	36.7(3.4)	41.2(5.1)	32.8(3.1)	N
Advantaged Urban	77.3(1.6)	77.2(1.7)	80.3(1.8)	77.4(2.2)	69.1(4.7)	72.5(3.7)	81.4(3.7)	N
Other	58.1(1.1)	59.9(1.1)	60.3(1.1)	59.3(0.7)	58.6(1.4)	59.5(1.3)	63.1(1.8)	N
PARENTS' EDUCATION LEVEL								
Less Than H.S.	37.9(1.5)	39.2(1.6)	37.3(1.5)	39.7(1.4)	44.9(3.5)	40.6(3.5)	38.7(3.3)	N
Graduated H.S.	58.7(1.2)	57.0(1.1)	55.3(1.2)	55.6(0.9)	54.5(1.9)	52.6(1.7)†	54.5(2.0)	L
Post H.S.	75.1(0.9)	74.3(1.0)	74.9(0.9)	70.6(0.8)†	67.5(2.2)†	70.4(1.3)†	71.8(1.7)	L
Unknown	32.1(1.4)	34.4(1.3)	31.5(2.4)	36.1(1.8)	36.5(4.3)	35.8(2.7)	37.2(2.8)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	58.9(1.2)	57.0(0.7)	57.1(1.4)	56.7(1.2)	59.0(1.5)	N
Non-Public	*****(0.0)	*****(0.0)	74.7(1.9)	74.2(1.9)	71.7(3.5)	72.9(4.7)	78.0(2.2)	N
QUARTILES								
Upper	98.6(0.2)	99.6(0.1)†	97.7(0.2)*	99.0(0.2)	99.0(0.6)	99.2(0.3)	99.4(0.4)	Q
Middle Two	64.4(0.9)*	66.6(0.9)	68.7(0.5)†	65.7(0.6)*	65.7(1.8)	65.4(1.3)*	70.7(1.4)†	N
Lower	3.9(0.4)	1.4(0.2)†*	7.9(0.7)†	4.3(0.4)	4.5(1.1)	4.6(0.9)	5.7(1.1)	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 300

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	9.8(0.5)*	10.2(0.5)*	11.3(0.5)*	11.0(0.4)*	10.9(0.8)*	11.0(0.6)*	15.3(0.9)†	LQ
SEX								
Male	7.3(0.5)*	7.0(0.4)*	9.1(0.7)*	9.0(0.4)†*	8.6(0.9)*	7.6(0.8)*	12.8(1.1)†	L
Female	12.3(0.6)*	13.5(0.7)*	13.5(0.6)*	13.2(0.5)*	13.2(0.9)*	14.5(0.9)	17.7(1.1)†	LQ
RACE/ETHNICITY								
White	11.3(0.5)*	12.1(0.5)*	13.6(0.6)†*	13.1(0.5)*	12.4(0.9)*	13.3(0.9)*	18.1(1.1)†	LQ
Black	0.8(0.2)*	1.5(0.3)*	1.8(0.5)*	2.8(0.5)†	4.6(1.2)†	4.6(0.8)†	5.7(1.4)†	L
Hispanic	*****(0.0)	2.2(1.0)	2.3(0.6)	4.1(0.7)	4.4(1.9)	3.9(1.2)	6.0(1.9)	L
Other	8.5(2.1)	11.2(2.3)	9.0(3.2)	12.2(2.9)	18.4(5.1)	8.3(3.2)	20.8(4.9)	L
GRADE								
Below Modal Grade	1.4(0.3)*	2.1(0.3)*	3.6(0.5)†	3.6(0.4)†*	4.1(0.9)†	4.8(0.5)†	6.4(0.9)†	L
At Modal Grade	12.9(0.6)*	13.2(0.6)*	14.4(0.7)*	15.0(0.5)†*	15.0(1.1)*	14.9(1.0)*	20.9(1.2)†	LQ
Above Modal Grade	22.4(3.9)*	27.7(6.2)*	19.7(9.0)*	41.9(9.9)	28.8(9.4)*	39.6(24.9)	72.3(9.9)†	LQ
REGION								
Northeast	12.5(1.1)*	11.1(1.3)*	11.8(1.1)*	12.5(0.4)*	12.5(1.7)	12.1(1.4)*	19.7(2.4)†	LQ
Southeast	6.3(0.6)*	8.1(0.7)*	9.0(1.1)	11.8(1.2)†	10.8(1.8)	10.7(1.4)†	13.0(1.5)†	L
Central	11.6(1.0)	12.4(0.9)	14.3(0.7)	10.5(0.6)	9.1(1.3)*	10.0(1.6)	16.6(2.3)	N
West	8.2(0.7)*	8.9(0.7)	10.0(1.0)	9.5(0.8)	11.4(1.4)	11.3(1.2)	12.5(1.2)†	L
TYPE OF COMMUNITY								
Extreme Rural	7.3(0.9)	6.1(1.0)	9.0(1.0)	9.4(1.4)	13.2(3.3)	8.7(2.2)	11.4(2.1)	L
Disadvantaged Urban	3.3(0.7)	2.4(0.6)	4.6(1.3)	3.8(0.8)	2.8(1.3)	5.5(1.3)	4.1(1.0)	N
Advantaged Urban	19.6(1.4)*	19.3(1.7)*	23.5(1.7)	21.7(2.2)*	15.5(2.5)*	18.9(2.4)*	30.4(2.4)†	N
Other	9.1(0.4)*	10.2(0.6)*	10.3(0.5)*	10.5(0.4)*	10.7(0.9)*	10.8(0.8)*	15.1(1.1)†	LQ
PARENTS' EDUCATION LEVEL								
Less Than H.S.	3.0(0.5)	3.1(0.4)	2.6(0.6)	3.5(0.5)	4.9(1.7)	4.0(1.5)	3.4(2.6)	N
Graduated H.S.	7.7(0.5)	7.8(0.5)	6.5(0.4)	7.5(0.6)	6.7(1.2)	7.1(0.9)	9.1(1.1)	Q
Post H.S.	17.0(0.8)	17.2(0.7)	18.0(0.8)	17.0(0.6)*	15.5(1.3)*	16.3(1.3)	21.4(1.5)	N
Unknown	2.7(0.3)	2.8(0.5)	2.1(0.5)	2.9(0.6)	4.6(1.2)	3.3(1.2)	4.5(1.4)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	10.5(0.5)*	10.0(0.4)*	10.1(0.8)*	10.1(0.7)*	13.6(1.0)†	LQ
Non-Public	*****(0.0)	*****(0.0)	17.4(1.5)	19.0(1.6)	17.3(2.1)	17.2(3.0)	26.1(3.3)	N
QUARTILES								
Upper	35.3(0.8)*	39.4(1.1)†*	38.1(1.2)*	40.7(1.0)†*	39.8(2.4)*	40.9(2.0)*	54.0(2.4)†	LQ
Middle Two	1.9(0.2)*	0.8(0.1)†*	3.6(0.3)†	1.7(0.2)*	1.9(0.4)	1.6(0.4)*	3.6(0.6)†	L
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 350

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	0.1(0.0)	0.2(0.0)	0.2(0.0)	0.3(0.1)	0.2(0.1)	0.4(0.1)	0.6(0.3)	L
SEX								
Male	0.1(0.0)	0.1(0.1)	0.2(0.1)	0.2(0.1)	0.1(0.1)	0.2(0.1)	0.4(0.3)	N
Female	0.2(0.1)	0.3(0.1)	0.3(0.1)	0.4(0.1)	0.4(0.2)	0.5(0.2)	0.8(0.3)	L
RACE/ETHNICITY								
White	0.2(0.1)	0.3(0.1)	0.3(0.1)	0.4(0.1)	0.3(0.1)	0.5(0.2)	0.8(0.3)	L
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.3)	0.1(0.3)	0.1(0.2)	N
Hispanic	*****(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	0.1(0.2)	0.0(0.0)	N
Other	0.2(0.0)	0.3(0.7)	0.3(0.8)	0.8(1.2)	1.2(0.0)	0.2(0.0)	1.7(0.0)	L
GRADE								
Below Modal Grade	0.0(0.0)*	0.0(0.0)*	0.0(0.0)*	0.0(0.0)*	0.0(0.0)	0.1(0.0)†	0.2(0.0)†	L
At Modal Grade	0.2(0.1)	0.3(0.1)	0.3(0.1)	0.4(0.1)	0.3(0.1)	0.5(0.2)	0.8(0.3)	L
Above Modal Grade	0.4(0.4)	1.9(1.3)	0.7(1.4)	11.6(8.6)	2.5(0.0)†	3.6(7.9)	9.9(9.3)	N
REGION								
Northeast	0.2(0.1)	0.3(0.1)	0.2(0.1)	0.3(0.1)	0.4(0.4)	0.5(0.3)	1.3(0.8)	N
Southeast	0.1(0.1)	0.1(0.1)	0.2(0.1)	0.4(0.1)	0.3(0.3)	0.4(0.2)	0.5(0.6)	N
Central	0.2(0.1)	0.3(0.1)	0.3(0.1)	0.2(0.1)	0.0(0.0)	0.3(0.2)	0.4(0.4)	N
West	0.1(0.0)	0.2(0.1)	0.2(0.1)	0.3(0.1)	0.2(0.2)	0.3(0.2)	0.5(0.4)	N
TYPE OF COMMUNITY								
Extreme Rural	0.1(0.1)	0.2(0.2)	0.1(0.2)	0.1(0.1)	0.1(0.0)	0.0(0.0)	0.4(0.0)	N
Disadvantaged Urban	0.0(0.0)	0.1(0.1)	0.0(0.1)	0.1(0.1)	0.0(0.0)	0.1(0.2)	0.0(0.0)	N
Advantaged Urban	0.4(0.2)	0.6(0.2)	0.7(0.3)	0.9(0.2)	0.4(0.4)	0.9(0.5)	1.3(1.1)	N
Other	0.1(0.0)	0.2(0.1)	0.2(0.1)	0.3(0.1)	0.2(0.1)	0.4(0.1)	0.6(0.3)	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	0.0(0.0)	0.1(0.0)	N
Graduated H.S.	0.1(0.0)	0.1(0.1)	0.0(0.0)	0.1(0.1)	0.1(0.1)	0.1(0.1)	0.1(0.1)	N
Post H.S.	0.3(0.1)	0.5(0.1)	0.4(0.1)	0.5(0.1)	0.4(0.1)	0.7(0.2)	1.0(0.4)	N
Unknown	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.1(0.0)	0.1(0.0)	0.1(0.0)	0.1(0.3)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	0.2(0.0)	0.3(0.1)	0.2(0.1)	0.3(0.1)	0.5(0.3)	N
Non-Public	*****(0.0)	*****(0.0)	0.5(0.2)	0.4(0.2)	0.3(0.0)	0.8(0.5)	1.2(0.8)	N
QUARTILES								
Upper	0.6(0.2)	0.9(0.2)	0.9(0.2)	1.1(0.3)	0.9(0.3)	1.5(0.4)	2.5(1.0)	L
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)*	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 150

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	99.6(0.1)	99.7(0.1)	99.9(0.1)†	100.0(0.0)†	100.0(0.0)†	99.9(0.1)	99.8(0.1)	L
SEX								
Male	99.4(0.1)	99.5(0.2)	99.8(0.1)†	99.9(0.0)†	100.0(0.0)†	99.8(0.3)	99.7(0.2)	L
Female	99.8(0.1)	99.8(0.1)	99.9(0.1)	99.9(0.1)	100.0(0.0)	100.0(0.1)	99.9(0.0)	L
RACE/ETHNICITY								
White	99.9(0.0)	99.9(0.0)	100.0(0.0)*	100.0(0.0)*	100.0(0.0)†	100.0(0.0)	99.9(0.0)	N
Black	97.6(0.4)	97.7(0.8)	99.0(0.3)†	99.9(0.1)†	100.0(0.0)†	99.6(0.8)	99.1(0.7)	LQ
Hispanic	*****(0.0)	99.3(0.4)	99.8(0.3)	99.8(0.2)	99.9(0.0)	99.7(0.0)	99.8(0.0)	N
Other	99.6(0.7)	100.0(0.0)	99.8(0.7)	99.3(1.2)	100.0(0.0)	99.9(0.9)	99.6(1.0)	N
GRADE								
Below Modal Grade	97.7(0.4)*	98.0(0.6)	99.1(0.3)†	99.8(0.1)†	100.0(0.0)†	99.6(0.5)†	99.3(0.4)†	LQ
At Modal Grade	99.9(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.0)†	100.0(0.0)	100.0(0.0)	N
Above Modal Grade	100.0(0.1)	99.9(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.0)	N
REGION								
Northeast	99.8(0.1)	99.7(0.2)	99.9(0.0)*	100.0(0.1)*	100.0(0.0)	99.9(0.0)	99.7(0.0)	N
Southeast	99.1(0.2)	99.5(0.1)	99.8(0.1)†	99.8(0.2)	100.0(0.0)†	99.8(0.2)	99.7(0.3)	L
Central	99.8(0.1)	99.8(0.1)	99.9(0.1)	100.0(0.0)*	100.0(0.0)	99.9(0.3)	99.8(0.0)	N
West	99.7(0.1)	99.5(0.2)	99.9(0.1)	99.9(0.0)	100.0(0.0)	99.9(0.2)	99.8(0.1)	N
TYPE OF COMMUNITY								
Extreme Rural	99.4(0.3)	99.6(0.1)	99.7(0.3)	99.9(0.1)	100.0(0.0)	100.0(0.0)	99.8(0.0)	L
Disadvantaged Urban	98.9(0.3)	98.4(0.7)	99.3(0.3)	99.9(0.1)†	100.0(0.0)†	99.7(0.5)	99.4(0.5)	L
Advantaged Urban	100.0(0.0)*	99.9(0.1)*	100.0(0.1)*	100.0(0.1)*	100.0(0.0)	99.8(0.0)†	99.5(0.0)†	L
Other	99.6(0.1)	99.8(0.1)	99.9(0.0)†	100.0(0.0)†	100.0(0.0)†	99.9(0.2)	99.9(0.1)	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	99.2(0.2)	99.3(0.2)	99.7(0.1)	99.9(0.1)†	100.0(0.0)†	99.9(0.0)†	99.8(0.3)	L
Graduated H.S.	99.8(0.1)	99.7(0.2)	99.8(0.1)	100.0(0.0)	100.0(0.0)†	100.0(0.2)	99.9(0.2)	N
Post H.S.	100.0(0.0)*	99.9(0.1)*	100.0(0.0)*	100.0(0.1)*	100.0(0.0)	100.0(0.1)	99.8(0.0)†	N
Unknown	98.0(0.5)	97.7(0.9)	98.9(0.6)	99.8(0.2)†	100.0(0.0)†	98.5(3.0)	99.5(0.8)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	99.9(0.1)	99.9(0.0)	100.0(0.0)†	99.9(0.1)	99.8(0.1)	Q
Non-Public	*****(0.0)	*****(0.0)	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.0)	N
QUARTILES								
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	98.4(0.2)	98.6(0.4)	99.4(0.2)†	99.8(0.1)†	100.0(0.0)†	99.5(0.6)	99.1(0.5)	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 200

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	96.0(0.3)	96.4(0.3)	97.2(0.3)†	98.3(0.1)†*	98.9(0.3)†*	98.1(0.3)†	97.1(0.4)	LQ
SEX								
Male	94.7(0.4)	95.3(0.4)	96.3(0.5)†	97.6(0.2)†	98.5(0.5)†	97.0(0.6)†	96.3(0.7)	LQ
Female	97.3(0.3)	97.5(0.4)	98.1(0.3)	99.0(0.1)†	99.3(0.3)†*	99.2(0.3)†	97.9(0.4)	LQ
RACE/ETHNICITY								
White	97.9(0.2)	98.6(0.1)†	99.1(0.1)†	99.0(0.1)†	99.3(0.3)†	98.8(0.2)†	98.6(0.3)	LQ
Black	81.9(1.5)*	82.0(1.8)*	85.6(1.7)	95.9(0.5)†	98.0(1.0)†*	95.7(1.3)†	91.6(1.6)†	LQ
Hispanic	*****(0.0)	88.7(2.4)	93.3(1.8)	95.6(0.7)†	96.3(2.4)	95.9(2.1)	93.4(2.3)	LQ
Other	95.2(1.7)	96.4(1.8)	97.9(1.5)	96.6(1.1)	98.5(1.6)	98.3(1.4)	95.1(2.0)	N
GRADE								
Below Modal Grade	81.8(1.1)*	83.9(1.4)*	86.5(1.6)*	94.4(0.5)†	97.1(1.2)†*	94.2(1.0)†	92.2(1.0)†	LQ
At Modal Grade	98.2(0.2)	98.6(0.2)	98.9(0.2)	99.3(0.1)†	99.5(0.2)†	99.4(0.2)†	99.0(0.3)	L
Above Modal Grade	99.0(0.2)	99.1(0.3)	99.3(0.2)	99.6(0.2)	99.6(0.4)	99.6(0.4)	98.6(1.1)	N
REGION								
Northeast	97.3(0.4)	97.1(0.5)	97.5(0.5)	98.6(0.3)	99.3(0.5)†	98.9(0.5)	98.1(0.9)	L
Southeast	92.2(1.0)	94.2(0.6)	95.6(1.0)	98.0(0.3)†	98.6(0.5)†*	97.5(1.0)†	95.1(1.1)	LQ
Central	97.4(0.4)	97.7(0.4)	97.8(0.6)	98.7(0.2)†	99.5(0.6)†	98.2(0.5)	98.7(0.6)	L
West	96.1(0.6)	95.9(0.9)	97.6(0.5)	98.0(0.3)†	98.5(0.6)†	97.8(0.8)	96.6(0.8)	Q
TYPE OF COMMUNITY								
Extreme Rural	94.3(1.1)	95.6(0.9)	96.0(2.3)	97.9(0.8)	99.3(0.0)†	98.6(0.9)†	97.6(0.7)	L
Disadvantaged Urban	89.9(1.6)	88.5(2.2)	91.0(1.6)	95.3(0.5)†	98.3(2.7)†	96.4(1.9)†	92.3(1.6)	L
Advantaged Urban	99.2(0.2)	99.2(0.2)	99.4(0.3)	99.0(0.3)	99.6(0.4)	98.6(0.8)	97.6(1.0)	N
Other	96.3(0.3)	97.4(0.2)†	97.8(0.3)†	98.6(0.2)†	98.8(0.4)†	98.1(0.4)†	97.7(0.5)	LQ
PARENTS' EDUCATION LEVEL								
Less Than H.S.	91.2(0.8)	92.3(0.8)	93.1(0.8)	96.5(0.4)†	97.6(1.2)†	96.3(1.8)	94.3(1.7)	L
Graduated H.S.	96.7(0.3)	97.0(0.6)	97.0(0.4)	98.1(0.2)†	98.8(0.4)†	98.2(0.6)	96.8(0.7)	L
Post H.S.	99.1(0.1)	99.0(0.2)	99.2(0.2)	99.3(0.1)*	99.6(0.2)*	99.2(0.3)	98.1(0.5)	Q
Unknown	88.0(1.6)	79.6(2.3)†	85.2(3.2)	92.8(1.4)	92.8(6.1)	84.6(4.5)	90.4(4.8)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	97.1(0.4)	98.1(0.1)†*	98.8(0.3)†*	98.0(0.3)	96.8(0.4)	Q
Non-Public	*****(0.0)	*****(0.0)	99.0(0.4)	99.6(0.2)	99.8(0.1)	99.6(0.6)	99.3(0.7)	N
QUARTILES								
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	84.1(0.8)	85.8(1.1)	89.0(1.0)†	93.2(0.5)†*	95.8(1.2)†*	92.4(1.2)†	88.3(1.5)	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 250

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	78.6(0.9)*	80.1(0.7)	80.7(0.9)	83.1(0.5)†	85.7(0.8)†*	84.1(1.0)†	82.5(0.8)†	L
SEX								
Male	74.4(1.0)	75.6(0.8)	77.9(1.0)	79.6(0.6)†	82.9(1.4)†	79.7(1.4)†	78.4(1.2)	LQ
Female	82.6(1.0)*	84.3(0.9)	83.6(1.0)	86.8(0.6)†	88.2(1.1)†	88.6(1.0)†	86.8(1.1)†	L
RACE/ETHNICITY								
White	83.7(0.7)*	86.2(0.6)†	86.9(0.6)†	88.0(0.5)†	88.7(0.9)†	88.3(1.1)†	88.0(0.9)†	LQ
Black	40.1(1.6)*	43.0(1.6)*	44.0(2.0)*	65.7(1.2)†	75.8(2.4)†*	69.1(2.8)†	61.4(2.3)†	LQ
Hispanic	*****(0.0)	52.9(4.1)*	62.2(3.1)	68.3(2.1)†	71.5(4.8)†	75.2(4.7)†	69.2(4.0)†	L
Other	72.1(4.4)	70.4(4.8)	77.0(3.6)	77.8(2.6)	86.5(6.4)	83.0(4.5)	79.3(3.8)	L
GRADE								
Below Modal Grade	40.0(1.7)*	44.3(1.9)*	45.6(2.4)*	60.2(1.2)†	66.5(2.5)†	63.5(2.5)†	62.8(1.9)†	L
At Modal Grade	84.1(0.8)*	85.9(0.6)*	86.0(0.8)*	89.0(0.4)†	91.1(0.9)†	91.2(0.8)†	90.6(0.8)†	L
Above Modal Grade	89.5(1.0)	90.1(1.0)	89.9(1.1)	92.0(0.8)	94.4(2.0)	93.4(1.8)	87.8(2.5)	N
REGION								
Northeast	82.4(2.0)	82.6(1.5)	80.9(1.9)	85.5(1.1)	88.5(1.9)	86.2(1.1)	86.1(2.0)	L
Southeast	67.8(2.0)	73.1(1.3)	76.2(2.3)†	80.1(1.1)†	82.6(2.1)†	80.8(2.0)†	74.4(2.5)	LQ
Central	82.8(1.4)	84.9(1.2)	82.8(1.7)	84.6(1.1)	87.3(1.7)	86.9(1.6)	87.1(1.7)	L
West	78.2(1.5)	77.2(1.7)	81.9(1.3)	83.4(0.8)†	84.4(1.6)†	82.6(2.4)	82.8(1.5)	L
TYPE OF COMMUNITY								
Extreme Rural	72.7(2.4)	77.9(2.3)	77.3(2.6)	79.5(2.7)	83.2(4.0)	83.3(2.7)†	79.7(3.2)	L
Disadvantaged Urban	59.5(2.4)	58.9(3.5)	56.8(2.7)	65.5(1.8)	80.5(4.4)†*	71.5(3.9)	66.7(2.7)	L
Advantaged Urban	91.1(1.2)	91.6(0.9)	89.9(1.8)	90.6(1.2)	91.7(1.8)	89.7(2.8)	87.8(2.7)	N
Other	79.2(0.9)*	82.1(0.8)	82.1(0.9)	84.4(0.5)†	84.7(1.0)†	85.0(1.2)†	84.9(1.0)†	L
PARENTS' EDUCATION LEVEL								
Less Than H.S.	60.8(1.4)	63.3(1.4)	63.4(1.8)	70.0(1.2)†	68.8(3.4)	71.2(2.9)†	69.1(3.1)	L
Graduated H.S.	78.5(1.1)	79.3(0.9)	76.5(1.1)	79.7(0.8)	82.1(1.3)	81.3(1.6)	77.9(1.6)	N
Post H.S.	90.0(0.6)	89.7(0.6)	89.8(0.6)	90.6(0.4)	91.7(0.9)*	89.8(1.0)	87.9(1.0)	Q
Unknown	61.4(4.3)	42.6(2.5)†	51.2(3.1)	56.7(2.3)	54.0(7.3)	47.8(5.2)	55.0(8.5)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	79.9(1.0)	82.1(0.5)	84.6(0.8)†*	83.3(1.0)	81.3(0.8)	LQ
Non-Public	*****(0.0)	*****(0.0)	90.3(1.8)	92.3(1.3)	92.9(1.9)	95.0(1.9)	94.1(2.3)	N
QUARTILES								
Upper	99.8(0.1)	100.0(0.0)	99.7(0.1)	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.1)	N
Middle Two	93.7(0.5)*	96.1(0.4)†	93.5(0.4)*	96.9(0.2)†	98.0(0.4)†	97.4(0.6)†	97.1(0.6)†	L
Lower	27.1(1.0)*	28.2(1.1)*	36.0(1.4)†	38.7(0.8)†	46.6(2.7)†*	41.7(3.4)†	35.6(2.1)†	LQ

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

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NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 300

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	39.0(1.0)*	38.7(0.8)*	37.8(1.1)*	40.3(0.8)	40.9(1.5)	41.4(1.0)	43.2(1.1)†	LQ
SEX								
Male	33.9(1.1)	33.7(1.0)	35.0(1.3)	35.4(0.8)	37.1(2.3)	36.1(1.5)	38.4(1.6)	L
Female	44.0(1.2)	43.6(0.9)*	40.7(1.2)*	45.0(0.9)	44.4(2.0)	46.8(1.3)	48.5(1.5)	LQ
RACE/ETHNICITY								
White	43.2(0.9)*	43.9(0.8)*	43.3(1.1)*	46.3(0.9)	45.4(1.6)	47.5(1.2)†	50.1(1.4)†	L
Black	7.7(0.9)*	8.1(0.7)*	7.1(0.8)*	16.2(0.9)†	24.9(3.1)†	19.7(1.8)†	16.9(2.5)†	L
Hispanic	*****(0.0)	12.6(2.7)*	16.5(2.1)*	21.2(2.3)	23.3(3.7)	27.1(3.3)†	27.3(3.2)†	L
Other	31.7(3.4)	28.1(4.1)	32.3(3.7)	38.3(3.3)	40.3(5.7)	40.4(6.1)	42.5(6.4)	L
GRADE								
Below Modal Grade	7.4(0.8)*	7.7(0.8)*	7.8(1.0)*	13.5(0.9)†	15.7(2.5)†	14.8(1.7)†	17.8(1.7)†	L
At Modal Grade	42.6(1.0)*	43.0(0.8)*	41.6(1.2)*	46.0(0.8)†*	47.2(1.8)	49.4(1.1)†	53.3(1.5)†	LQ
Above Modal Grade	53.3(1.8)	52.4(1.1)	51.3(2.2)	55.5(1.5)	57.1(4.6)	61.9(3.6)	53.5(3.8)	N
REGION								
Northeast	44.3(2.6)	41.6(1.4)*	38.0(2.6)*	42.9(2.3)	46.9(3.1)	46.6(2.2)	51.0(3.1)	LQ
Southeast	28.2(1.6)	31.8(1.4)	33.8(1.8)	36.4(1.6)†	36.4(2.5)†	36.9(2.7)†	33.5(2.3)	LQ
Central	43.2(1.9)	43.6(1.5)	39.0(2.4)	41.4(1.6)	40.2(4.2)	44.5(2.4)	45.4(2.7)	Q
West	37.2(1.5)	35.4(1.5)*	39.6(2.2)	40.4(1.2)	40.3(2.4)	38.0(2.8)	44.0(2.5)	L
TYPE OF COMMUNITY								
Extreme Rural	32.7(2.9)	35.7(2.2)	31.0(2.2)	33.5(3.1)	37.3(11.3)	40.2(3.3)	39.1(2.7)	N
Disadvantaged Urban	19.4(1.8)	19.5(2.4)	15.8(2.2)	19.1(2.1)	23.6(6.2)	25.8(4.3)	22.4(3.2)	N
Advantaged Urban	57.2(2.2)	57.1(1.9)	53.2(2.6)	53.9(2.6)	53.3(2.9)	51.2(4.5)	57.9(4.5)	N
Other	38.6(0.9)*	39.6(0.9)*	38.2(1.1)*	40.4(0.7)*	38.8(1.2)*	42.1(1.2)	45.4(1.2)†	LQ
PARENTS' EDUCATION LEVEL								
Less Than H.S.	19.5(1.0)	19.0(1.2)	17.0(1.3)	21.1(1.2)	17.6(3.9)	20.4(2.6)	26.0(3.4)	Q
Graduated H.S.	35.9(1.1)	33.2(0.8)	29.3(0.9)†	31.6(0.9)†	30.9(1.7)	32.3(1.6)	33.8(2.2)	Q
Post H.S.	53.4(1.1)	52.1(1.0)	50.2(1.1)	53.0(1.0)	50.8(1.9)	51.1(1.2)	51.5(1.4)	N
Unknown	22.6(3.3)	9.2(1.7)†	12.4(2.1)	13.6(2.0)	14.5(5.7)	11.5(3.7)	14.0(3.6)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	36.8(1.2)*	38.7(0.7)	39.5(1.6)	39.8(1.0)	41.3(1.0)†	L
Non-Public	*****(0.0)	*****(0.0)	49.9(3.3)	54.4(2.3)	50.4(5.7)	63.0(5.9)	62.6(5.3)	L
QUARTILES								
Upper	89.0(0.8)*	93.1(0.5)†	85.2(0.7)†*	90.9(0.5)	91.9(1.1)	93.6(1.4)†	93.5(1.1)†	LQ
Middle Two	33.3(0.8)*	30.8(1.0)*	32.5(0.8)*	34.0(0.8)*	35.6(2.1)	35.8(1.3)	39.5(1.5)†	LQ
Lower	0.5(0.2)	0.1(0.1)	1.1(0.3)	0.5(0.1)	0.5(0.3)	0.6(0.4)	0.5(0.5)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Reading proficiency across assessment years

Weighted percentages of observations with reading proficiency at or above 350

	1971	1975	1980	1984	1988	1990	1992	TREND TESTS
TOTAL	6.8(0.4)	6.2(0.3)	5.3(0.4)†	5.7(0.3)	4.6(0.6)†*	7.0(0.5)	6.8(0.6)	Q
SEX								
Male	5.2(0.4)	5.1(0.5)	4.5(0.4)	4.8(0.4)	3.5(0.9)	5.6(0.5)	5.3(0.7)	N
Female	8.4(0.5)	7.3(0.4)	6.0(0.6)†	6.7(0.4)†	5.5(0.8)†	8.5(0.7)	8.4(0.7)	Q
RACE/ETHNICITY								
White	7.7(0.4)	7.2(0.4)	6.2(0.4)	6.9(0.4)	5.5(0.7)†*	8.7(0.6)	8.3(0.8)	Q
Black	0.4(0.1)	0.4(0.3)	0.2(0.2)	0.9(0.3)	1.4(0.7)	1.5(1.0)	1.6(0.9)	L
Hispanic	*****(0.0)	1.2(0.6)	1.3(0.4)	2.0(0.4)	1.3(1.2)	2.4(1.4)	2.3(0.8)	N
Other	4.0(1.9)	3.8(3.2)	3.8(2.5)	7.0(1.2)	4.2(3.0)	6.2(2.6)	7.1(2.3)	N
GRADE								
Below Modal Grade	0.5(0.2)	0.3(0.1)	0.3(0.2)	0.6(0.2)	1.4(0.7)	1.0(0.2)	0.8(0.4)	L
At Modal Grade	7.1(0.4)	6.7(0.4)*	5.7(0.4)*	6.6(0.3)*	5.2(0.7)*	8.4(0.6)	9.0(0.7)	LQ
Above Modal Grade	12.1(1.3)	11.0(1.0)	9.5(1.7)	10.1(1.0)	7.3(2.9)	14.7(2.6)	10.9(3.1)	N
REGION								
Northeast	8.7(1.1)	7.6(1.0)	5.6(0.7)	6.1(0.6)	5.6(1.6)	9.5(1.2)	9.5(1.8)	Q
Southeast	3.9(0.6)	4.5(0.5)	4.4(0.9)	5.3(0.5)	4.1(1.3)	5.8(1.1)	4.3(1.2)	N
Central	7.8(0.8)	7.1(0.5)	5.0(0.6)†	5.6(0.5)	4.4(0.7)†	7.4(1.2)	6.2(0.7)	Q
West	6.0(0.6)	5.1(0.5)	5.8(0.7)	5.8(0.7)	4.2(0.8)	5.7(1.0)	7.3(1.0)	N
TYPE OF COMMUNITY								
Extreme Rural	4.6(0.8)	5.0(0.6)	3.7(0.6)	3.7(0.6)	3.2(2.1)	7.0(1.6)	4.5(1.3)	N
Disadvantaged Urban	1.8(0.4)	1.9(0.6)	1.1(0.5)	1.7(0.5)	0.7(1.2)	3.2(2.3)	1.9(0.8)	N
Advantaged Urban	13.1(1.1)	12.9(1.0)	8.7(0.9)†	9.7(0.9)	7.4(1.7)†	11.0(2.6)	11.6(2.6)	Q
Other	6.5(0.4)	6.1(0.4)	5.3(0.5)	5.5(0.3)	4.1(0.8)*	6.9(0.6)	7.3(0.7)	Q
PARENTS' EDUCATION LEVEL								
Less Than H.S.	1.9(0.3)	1.6(0.3)	1.0(0.3)	1.4(0.3)	1.0(0.7)	1.8(0.8)	2.4(1.4)	N
Graduated H.S.	4.9(0.4)*	3.8(0.4)	2.6(0.2)†	2.9(0.3)†	1.8(0.7)†	3.9(0.7)	3.2(0.5)†	LQ
Post H.S.	11.3(0.6)	10.1(0.6)	8.3(0.6)†	8.9(0.5)†	6.7(1.0)†	9.8(0.7)	9.4(0.8)	LQ
Unknown	2.6(0.4)	0.3(0.0)†	1.1(1.1)	0.6(0.3)†	0.2(0.0)†	0.3(0.5)†	0.8(1.5)	N
TYPE OF SCHOOL								
Public	*****(0.0)	*****(0.0)	5.1(0.4)	5.3(0.3)	4.4(0.6)	6.5(0.5)	6.2(0.6)	L
Non-Public	*****(0.0)	*****(0.0)	7.7(1.3)	9.2(1.0)	5.6(2.4)	13.7(2.7)	13.1(2.9)	L
QUARTILES								
Upper	24.9(0.9)	24.5(0.9)	18.7(1.0)†*	21.7(1.1)	17.6(2.1)†*	26.9(1.6)	26.1(2.0)	Q
Middle Two	1.2(0.2)	0.2(0.1)†	1.2(0.2)	0.5(0.1)†	0.3(0.2)†	0.6(0.3)	0.6(0.3)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1971, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992
TOTAL SAMPLE							
Mean	207.6(1.0)	210.0(0.7)	215.0(1.0)	211.0(0.9)	211.8(1.1)	209.2(1.2)	210.5(0.9)
St. Dev.	42.1(0.4)	38.6(0.3)	37.9(0.4)	41.1(0.4)	41.2(1.0)	44.7(0.8)	40.3(0.6)
Percentiles							
5	134.8(2.0)	143.2(1.3)	148.5(1.6)	140.5(1.2)	141.9(3.6)	134.8(3.2)	140.7(1.6)
10	151.6(1.6)	159.2(1.1)	165.1(1.4)	156.7(1.2)	156.7(2.1)	150.1(1.9)	156.0(1.5)
25	180.0(1.3)	185.2(0.8)	191.1(1.2)	183.7(1.2)	184.3(1.8)	178.7(1.8)	183.1(1.5)
50	209.3(1.0)	211.9(0.8)	217.2(0.9)	212.6(1.0)	213.7(1.4)	210.3(1.5)	213.6(0.9)
75	236.7(1.0)	236.5(0.9)	241.3(1.0)	239.6(0.9)	240.1(1.3)	240.3(1.8)	239.3(1.2)
90	260.5(0.8)	258.1(0.8)	261.7(1.1)	262.8(0.9)	263.0(1.7)	265.7(1.8)	259.9(1.2)
95	274.1(0.9)	270.6(1.1)	273.3(1.6)	276.5(1.4)	277.5(2.0)	280.4(1.3)	272.1(1.2)
MALE STUDENTS							
Mean	201.2(1.1)	204.3(0.8)	210.0(1.1)	207.5(1.0)	207.5(1.4)	204.0(1.7)	205.9(1.3)
St. Dev.	42.1(0.5)	39.0(0.5)	38.7(0.5)	42.3(0.5)	42.7(1.2)	45.1(1.0)	41.3(0.6)
Percentiles							
5	128.9(2.0)	136.6(1.1)	141.9(2.3)	136.0(1.1)	136.5(2.9)	129.6(5.8)	135.6(2.0)
10	145.0(1.7)	152.6(1.3)	158.7(1.4)	151.1(1.5)	151.1(2.4)	145.1(1.9)	150.5(2.1)
25	173.6(1.4)	178.9(1.0)	185.3(1.4)	178.5(1.1)	178.4(1.8)	172.2(2.8)	176.8(1.7)
50	202.8(1.2)	206.1(0.9)	212.5(1.2)	209.1(1.3)	209.7(1.8)	204.4(2.2)	208.3(1.6)
75	230.4(1.1)	231.4(1.0)	237.1(1.1)	237.7(1.2)	237.1(1.9)	236.1(1.9)	235.5(1.6)
90	254.6(1.2)	253.0(1.1)	257.5(0.8)	261.1(1.1)	260.3(2.0)	261.7(2.6)	257.3(1.0)
95	268.4(1.5)	265.4(1.4)	268.7(1.1)	275.1(1.1)	275.1(2.3)	276.1(5.6)	269.9(2.8)
FEMALE STUDENTS							
Mean	213.9(1.0)	215.8(0.8)	220.1(1.1)	214.4(0.9)	216.3(1.3)	214.5(1.2)	215.4(0.9)
St. Dev.	41.0(0.6)	37.3(0.4)	36.5(0.5)	39.6(0.5)	39.2(1.2)	43.6(1.3)	38.8(0.9)
Percentiles							
5	142.9(2.1)	151.3(1.4)	157.1(1.8)	146.4(2.1)	149.3(5.5)	140.6(3.9)	147.3(3.3)
10	159.5(1.3)	167.1(1.1)	172.5(1.7)	162.9(1.6)	164.3(4.6)	156.8(3.2)	163.8(2.3)
25	186.7(1.2)	192.0(1.0)	197.2(1.2)	188.7(1.0)	190.6(2.4)	185.7(1.7)	190.0(1.4)
50	215.6(1.1)	217.2(0.9)	221.7(1.1)	215.7(1.0)	217.5(2.0)	215.9(1.3)	218.5(1.3)
75	242.4(1.1)	241.1(1.0)	245.2(1.1)	241.6(1.0)	242.6(1.1)	244.4(1.9)	242.5(1.3)
90	265.0(0.9)	262.3(1.0)	265.5(1.7)	264.4(1.3)	265.3(2.2)	269.4(1.9)	262.3(1.9)
95	278.6(1.5)	274.8(1.1)	277.0(1.5)	277.8(2.0)	279.1(3.4)	284.1(2.1)	273.7(2.0)
WHITE STUDENTS							
Mean	214.0(0.9)	216.6(0.7)	221.3(0.8)	218.2(0.9)	217.7(1.4)	217.0(1.3)	217.9(1.0)
St. Dev.	39.4(0.4)	36.1(0.3)	35.2(0.3)	38.8(0.3)	39.3(1.0)	42.9(1.0)	37.5(0.7)
Percentiles							
5	146.3(2.4)	154.4(1.2)	160.7(1.5)	152.0(1.3)	150.2(3.4)	144.2(3.2)	152.8(1.6)
10	162.4(1.3)	169.8(1.1)	175.3(1.0)	167.1(1.0)	165.0(3.9)	160.0(1.5)	167.0(1.8)
25	188.1(1.2)	193.3(0.7)	199.0(0.9)	192.4(1.0)	191.8(2.4)	188.0(2.8)	192.8(1.3)
50	215.2(0.9)	217.9(0.7)	222.8(0.8)	219.5(1.0)	219.1(1.2)	218.4(2.1)	220.6(1.3)
75	241.0(0.9)	241.0(0.9)	245.7(0.9)	244.9(0.9)	244.3(1.8)	246.7(2.3)	244.2(1.2)
90	263.6(0.8)	261.6(1.0)	265.1(1.1)	267.2(1.3)	266.7(2.2)	270.9(2.1)	264.0(1.0)
95	276.7(0.9)	273.8(1.3)	276.4(1.2)	280.2(1.3)	280.6(2.6)	285.3(2.6)	275.9(3.1)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 9

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992
BLACK STUDENTS							
Mean	170.1(1.7)	181.2(1.2)	189.3(1.8)	185.7(1.4)	188.5(2.4)	181.8(2.9)	184.5(2.2)
St. Dev.	38.3(0.7)	35.8(0.6)	37.6(1.0)	38.9(0.9)	39.4(1.6)	41.7(1.7)	39.8(1.3)
Percentiles							
5	106.7(2.5)	118.8(2.3)	123.1(4.1)	120.8(2.2)	124.7(6.3)	115.0(4.7)	119.3(6.1)
10	120.0(2.0)	133.7(2.8)	139.4(4.0)	135.1(2.8)	138.3(3.4)	128.9(3.9)	132.4(3.6)
25	143.4(2.0)	157.5(2.3)	165.3(1.9)	159.3(1.8)	161.8(3.0)	152.5(3.2)	156.3(4.4)
50	171.0(2.1)	182.8(1.2)	191.7(2.1)	186.5(1.5)	188.3(4.0)	181.8(3.1)	185.1(2.5)
75	196.3(1.8)	206.5(1.2)	215.6(1.9)	212.5(1.6)	216.5(2.9)	210.5(2.4)	213.5(2.6)
90	218.9(1.6)	226.3(1.5)	236.3(1.9)	235.3(2.5)	238.2(3.8)	236.3(2.7)	235.5(2.9)
95	232.4(1.7)	237.2(2.0)	247.1(1.8)	248.4(2.0)	252.2(4.6)	250.7(6.9)	248.7(2.5)
HISPANIC STUDENTS[1]							
Mean	0.0(0.0)	182.7(2.2)	190.2(2.3)	187.1(3.1)	193.7(3.5)	189.4(2.3)	191.7(3.1)
St. Dev.	0.0(0.0)	36.8(1.3)	38.2(1.2)	39.2(1.5)	41.5(2.8)	39.7(1.6)	40.3(1.8)
Percentiles							
5	0.0(0.0)	120.3(4.9)	123.4(3.1)	120.3(5.1)	121.8(11.3)	125.4(8.9)	124.8(6.2)
10	0.0(0.0)	133.4(5.2)	138.4(4.1)	134.7(7.2)	140.3(7.7)	139.0(4.3)	138.7(5.6)
25	0.0(0.0)	157.4(3.0)	164.3(3.9)	160.7(2.4)	164.9(5.1)	160.8(1.9)	162.5(6.0)
50	0.0(0.0)	184.2(2.9)	192.0(3.3)	189.2(2.3)	196.0(3.4)	189.3(3.5)	192.7(4.6)
75	0.0(0.0)	209.4(3.4)	217.6(3.0)	215.4(2.3)	222.0(6.0)	218.9(4.0)	222.0(2.3)
90	0.0(0.0)	228.6(3.6)	237.8(2.7)	236.1(2.2)	246.7(8.0)	239.3(5.7)	244.7(5.6)
95	0.0(0.0)	240.3(2.6)	249.9(4.3)	247.1(2.1)	258.6(11.4)	253.2(6.7)	255.4(10.4)

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[1] No data were available for Hispanic students in 1971.
The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992
TOTAL SAMPLE							
Mean	255.2(0.9)	255.9(0.8)	258.5(0.9)	257.1(0.6)	257.5(1.0)	256.8(0.8)	259.8(1.2)
St. Dev.	35.7(0.4)	35.8(0.3)	34.9(0.4)	35.5(0.3)	34.7(0.5)	36.0(0.6)	39.4(0.8)
Percentiles							
5	192.8(1.8)	193.5(1.1)	199.1(1.9)	196.7(1.1)	199.5(1.7)	195.7(1.9)	190.9(2.8)
10	207.8(1.4)	208.7(1.0)	212.8(1.5)	210.2(0.9)	212.9(1.2)	209.8(1.8)	207.9(1.9)
25	232.3(1.2)	232.9(1.0)	235.3(1.1)	233.9(0.8)	234.2(1.2)	233.2(1.0)	234.7(1.8)
50	257.0(1.0)	257.7(0.9)	259.6(0.8)	258.2(0.8)	257.9(1.1)	257.3(0.9)	261.6(1.6)
75	279.9(0.8)	280.6(0.8)	282.8(0.8)	281.6(0.6)	281.4(1.4)	281.5(0.8)	287.0(1.4)
90	299.6(0.9)	300.5(1.0)	302.3(0.8)	301.7(0.8)	301.6(1.0)	302.0(1.0)	309.2(1.8)
95	310.8(0.9)	311.8(1.0)	313.9(0.8)	313.7(1.0)	313.7(1.3)	314.4(1.3)	321.9(2.6)
MALE STUDENTS							
Mean	249.6(1.0)	249.6(0.8)	254.3(1.1)	252.7(0.7)	251.8(1.3)	250.5(1.1)	254.1(1.7)
St. Dev.	35.9(0.5)	35.7(0.4)	35.0(0.5)	35.8(0.4)	35.3(0.7)	36.0(0.7)	40.4(1.1)
Percentiles							
5	186.7(1.6)	187.2(1.1)	194.9(1.9)	191.9(1.0)	192.6(2.5)	189.7(2.2)	184.9(3.7)
10	201.6(1.6)	202.3(1.5)	208.5(1.5)	205.5(1.2)	206.7(1.8)	202.8(1.4)	201.0(2.8)
25	226.3(1.2)	226.8(1.1)	230.8(1.2)	228.9(1.1)	227.7(2.1)	226.9(1.9)	227.4(2.1)
50	251.4(0.8)	251.4(0.9)	255.4(1.1)	253.9(0.9)	252.1(2.1)	251.9(1.3)	255.6(2.4)
75	274.5(0.8)	274.1(0.8)	278.6(1.2)	277.5(1.0)	276.5(2.0)	275.3(1.2)	282.5(1.5)
90	294.2(1.0)	293.5(1.0)	298.5(1.2)	297.8(1.0)	297.2(1.5)	295.3(1.2)	305.0(3.4)
95	305.9(1.3)	305.6(1.7)	309.9(0.9)	309.4(1.2)	309.4(2.8)	307.4(3.2)	317.8(3.1)
FEMALE STUDENTS							
Mean	260.8(0.9)	262.3(0.9)	262.6(0.9)	261.8(0.7)	263.0(1.0)	263.1(1.1)	265.3(1.2)
St. Dev.	34.5(0.4)	34.8(0.4)	34.2(0.4)	34.5(0.3)	33.1(0.6)	34.8(0.7)	37.5(0.8)
Percentiles							
5	200.9(1.5)	202.1(1.7)	204.2(2.0)	203.0(1.3)	207.3(3.9)	205.3(3.1)	199.3(4.1)
10	215.2(1.4)	215.9(1.4)	218.0(2.0)	216.8(1.1)	221.0(1.6)	217.9(2.0)	216.8(2.9)
25	238.5(0.8)	239.8(1.1)	240.0(1.1)	239.1(0.8)	240.0(1.6)	240.0(1.9)	241.5(1.2)
50	262.4(1.1)	264.2(1.0)	263.4(0.9)	262.7(0.8)	263.0(1.4)	263.0(1.6)	266.6(1.9)
75	285.0(1.0)	286.6(1.2)	286.3(1.0)	285.4(0.7)	285.8(1.0)	286.6(1.1)	290.8(1.1)
90	303.8(1.3)	305.4(1.0)	305.6(1.0)	305.5(0.8)	305.2(1.2)	308.1(1.5)	312.8(1.5)
95	314.6(0.9)	316.1(1.1)	317.3(1.6)	317.5(1.6)	317.7(3.2)	319.4(2.5)	324.5(2.4)
WHITE STUDENTS							
Mean	260.9(0.7)	262.1(0.7)	264.4(0.7)	262.5(0.6)	261.3(1.1)	262.3(0.9)	266.4(1.2)
St. Dev.	32.9(0.3)	32.9(0.3)	32.7(0.3)	33.8(0.4)	33.9(0.5)	34.5(0.6)	36.6(0.7)
Percentiles							
5	204.6(1.2)	206.3(1.0)	209.0(1.2)	204.9(0.9)	204.0(1.4)	204.1(2.2)	204.0(2.7)
10	217.9(0.9)	219.2(0.7)	221.8(1.2)	218.3(0.8)	217.1(2.1)	217.3(1.7)	218.7(2.2)
25	239.4(0.9)	240.7(0.8)	242.8(0.8)	240.6(0.8)	238.3(1.0)	239.6(1.7)	242.5(1.4)
50	262.0(0.8)	263.1(1.0)	265.1(0.6)	263.4(0.7)	262.2(1.1)	262.6(1.4)	267.5(2.0)
75	283.5(0.9)	284.6(0.8)	286.9(0.7)	285.6(0.7)	285.1(0.9)	285.6(1.2)	291.5(1.1)
90	302.2(0.7)	303.5(0.9)	305.7(0.8)	305.0(0.8)	304.2(1.5)	306.0(2.4)	312.4(1.9)
95	313.1(1.1)	314.3(0.9)	316.9(0.8)	316.8(1.3)	315.8(1.1)	318.1(2.7)	324.4(2.0)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 13

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992
BLACK STUDENTS							
Mean	222.4(1.2)	225.7(1.2)	232.8(1.5)	236.3(1.2)	242.9(2.4)	241.5(2.2)	237.6(2.3)
St. Dev.	33.5(0.5)	34.9(0.7)	32.7(0.8)	34.1(0.8)	32.1(1.3)	35.3(1.5)	39.8(1.9)
Percentiles							
5	166.3(1.5)	167.2(2.5)	178.6(2.4)	180.1(2.0)	190.6(3.4)	182.3(5.3)	169.6(10.1)
10	178.0(2.2)	180.1(2.5)	190.6(3.3)	192.4(1.9)	202.2(3.3)	194.3(7.3)	185.3(3.3)
25	199.1(1.9)	202.2(1.3)	210.9(1.8)	213.3(2.6)	222.0(2.4)	217.0(3.2)	210.0(3.0)
50	223.3(1.4)	226.0(1.7)	232.6(1.3)	236.4(1.3)	242.4(2.7)	242.5(4.0)	239.2(2.3)
75	245.5(1.4)	249.9(1.5)	254.8(1.9)	259.3(1.1)	263.6(4.5)	265.7(2.5)	265.6(2.8)
90	264.8(1.3)	270.6(1.2)	275.0(1.7)	280.3(1.9)	283.6(4.7)	285.9(4.9)	287.3(3.1)
95	276.8(2.3)	282.7(2.3)	286.2(1.5)	292.7(1.6)	298.9(2.2)	298.9(3.0)	302.5(4.9)
HISPANIC STUDENTS[1]							
Mean	0.0(0.0)	232.5(3.0)	237.2(2.0)	239.6(2.0)	240.1(3.5)	237.8(2.3)	239.2(3.5)
St. Dev.	0.0(0.0)	34.5(1.0)	32.7(0.8)	34.9(1.2)	34.6(2.4)	35.9(1.3)	40.4(2.4)
Percentiles							
5	0.0(0.0)	173.7(6.9)	182.6(4.8)	180.8(2.9)	181.4(6.9)	178.0(9.6)	165.0(13.0)
10	0.0(0.0)	186.7(2.8)	194.9(4.5)	193.3(3.3)	194.6(3.8)	191.3(4.9)	183.8(8.0)
25	0.0(0.0)	207.8(3.0)	214.8(3.0)	216.1(2.5)	218.9(6.1)	214.1(4.1)	213.0(5.7)
50	0.0(0.0)	233.5(3.6)	237.5(2.4)	240.4(2.5)	240.3(4.1)	238.6(4.1)	242.0(10.6)
75	0.0(0.0)	256.7(4.8)	259.3(1.9)	263.5(2.3)	262.0(5.4)	262.2(3.1)	267.0(7.7)
90	0.0(0.0)	277.2(2.3)	279.2(2.9)	284.2(2.2)	284.0(8.7)	283.8(6.0)	288.7(8.0)
95	0.0(0.0)	289.1(3.5)	290.5(1.5)	295.9(3.1)	297.3(10.1)	295.9(4.5)	303.1(7.7)

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[1] No data were available for Hispanic students in 1971.

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors

	1971	1975	1980	1984	1988	1990	1992
TOTAL SAMPLE							
Mean	285.2(1.2)	285.6(0.8)	285.5(1.2)	288.8(0.8)	290.1(1.0)	290.2(1.1)	289.7(1.1)
St. Dev.	45.8(0.5)	44.0(0.6)	41.8(0.6)	40.3(0.3)	37.1(0.7)	41.3(0.7)	43.0(0.6)
Percentiles							
5	206.1(1.5)	209.3(3.0)	213.0(1.7)	219.9(1.3)	226.1(1.3)	220.0(2.3)	214.3(2.9)
10	225.3(1.7)	228.4(1.7)	230.6(1.8)	236.0(0.9)	241.5(2.2)	236.9(3.1)	232.7(2.7)
25	255.9(1.6)	257.8(1.1)	258.7(1.2)	262.5(1.1)	265.7(1.8)	263.5(1.3)	262.6(1.1)
50	287.7(1.4)	287.9(0.7)	287.5(1.4)	290.3(0.9)	291.1(1.9)	291.1(1.3)	293.0(1.2)
75	316.7(1.0)	315.7(0.7)	314.6(1.2)	316.8(0.9)	316.0(1.4)	318.6(1.5)	319.4(1.4)
90	341.7(1.1)	340.0(0.9)	337.5(1.4)	339.6(0.7)	336.9(2.1)	342.7(2.1)	342.7(1.8)
95	356.5(1.5)	354.3(0.7)	350.9(1.3)	352.6(1.0)	348.7(1.8)	356.0(1.7)	355.8(1.9)
MALE STUDENTS							
Mean	278.9(1.2)	279.7(1.0)	281.8(1.3)	283.9(0.8)	286.0(1.5)	284.0(1.6)	284.2(1.6)
St. Dev.	46.3(0.6)	45.1(0.6)	42.7(0.6)	40.9(0.4)	37.5(1.2)	42.6(0.8)	43.8(0.8)
Percentiles							
5	198.3(1.6)	201.6(1.4)	207.2(1.9)	214.3(1.5)	222.0(2.3)	209.4(3.2)	208.1(3.7)
10	218.2(2.0)	220.8(2.0)	225.4(2.2)	230.1(1.0)	236.3(3.7)	228.2(3.4)	226.0(3.6)
25	249.1(1.4)	250.9(1.1)	254.4(1.5)	257.0(1.3)	261.6(1.8)	257.3(1.9)	255.4(2.6)
50	281.6(1.4)	282.0(1.3)	284.1(1.2)	285.4(0.8)	287.0(2.3)	285.9(2.1)	287.6(1.7)
75	310.9(1.2)	310.8(1.0)	311.9(1.2)	312.3(1.0)	312.0(3.4)	313.2(2.1)	315.0(1.6)
90	336.1(2.0)	335.9(1.4)	335.2(1.3)	335.3(1.2)	333.4(2.1)	338.4(2.3)	338.4(3.8)
95	350.8(1.7)	350.3(1.9)	348.3(1.2)	348.8(1.6)	345.6(4.2)	351.9(1.6)	351.2(2.9)
FEMALE STUDENTS							
Mean	291.3(1.3)	291.2(1.0)	289.2(1.2)	294.0(0.9)	293.8(1.5)	296.5(1.2)	295.7(1.1)
St. Dev.	44.5(0.6)	42.2(0.8)	40.5(0.7)	39.0(0.4)	36.3(0.9)	38.8(0.8)	41.4(0.9)
Percentiles							
5	215.0(1.9)	218.9(2.7)	219.4(2.1)	227.4(1.9)	231.7(3.3)	232.3(3.8)	223.8(4.5)
10	233.3(1.6)	236.8(2.0)	236.8(1.6)	242.9(1.2)	246.5(4.8)	247.0(2.1)	241.8(1.9)
25	262.7(1.7)	264.9(1.4)	262.9(1.8)	268.6(1.3)	270.2(2.1)	270.5(2.3)	270.1(1.8)
50	293.6(1.2)	293.4(0.9)	290.7(1.1)	295.2(1.0)	294.6(2.2)	296.6(1.2)	298.5(1.6)
75	321.7(1.6)	319.7(0.7)	317.0(1.6)	320.9(0.9)	319.4(1.5)	323.5(1.5)	323.8(1.5)
90	346.2(1.6)	343.3(1.0)	339.7(1.7)	343.1(1.0)	339.8(1.7)	346.3(2.5)	346.6(2.4)
95	360.7(1.2)	357.0(1.3)	353.2(1.8)	355.5(1.2)	351.7(2.8)	359.4(2.7)	359.6(2.7)
WHITE STUDENTS							
Mean	291.4(1.0)	293.0(0.6)	292.8(0.9)	295.3(0.9)	294.7(1.2)	296.6(1.2)	297.4(1.4)
St. Dev.	42.5(0.4)	39.8(0.4)	37.9(0.4)	38.2(0.3)	36.0(0.8)	39.6(0.6)	39.8(0.6)
Percentiles228.1(3.2)							
5	244.9(2.8)	225.9(1.2)	228.5(1.4)	229.9(1.4)	232.6(1.1)	228.5(2.5)	228.1(3.2)
10	236.6(1.0)	241.7(0.9)	243.5(1.5)	245.6(0.9)	247.3(3.7)	246.2(2.5)	244.9(2.8)
25	263.9(1.4)	267.0(0.9)	267.7(1.0)	270.7(1.1)	271.4(1.7)	271.1(1.4)	272.3(1.9)
50	292.9(1.2)	294.0(0.8)	293.6(0.8)	296.7(1.1)	295.4(1.6)	297.5(1.2)	300.1(1.9)
75	320.1(1.1)	319.9(0.7)	318.8(1.0)	321.6(0.8)	319.9(1.9)	323.8(1.9)	324.5(1.2)
90	344.5(1.0)	343.2(0.7)	340.6(1.3)	343.2(0.8)	339.7(1.6)	347.1(1.6)	346.6(2.5)
95	358.9(1.4)	357.0(1.2)	353.5(1.4)	355.8(0.9)	351.6(3.0)	359.7(1.7)	359.0(2.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 Reading Trend Assessment — Age 17

Weighted means, standard deviations, and percentiles of reading distributions with jackknifed standard errors (continued)

	1971	1975	1980	1984	1988	1990	1992
BLACK STUDENTS							
Mean	238.7(1.7)	240.6(2.0)	243.1(1.8)	263.6(1.2)	274.4(2.4)	267.3(2.3)	260.6(2.1)
St. Dev.	43.5(0.7)	43.8(1.2)	39.5(1.2)	37.0(0.8)	35.9(1.3)	39.2(2.2)	42.2(1.7)
Percentiles							
5	164.7(4.4)	164.7(3.1)	176.0(2.4)	201.9(4.1)	214.4(9.6)	201.3(7.9)	187.9(3.3)
10	182.1(4.2)	182.4(5.3)	191.1(3.6)	216.0(2.0)	227.8(4.3)	217.4(4.0)	206.2(6.7)
25	210.4(2.4)	212.1(3.0)	217.0(2.7)	239.0(1.4)	250.5(2.5)	242.4(3.9)	235.1(4.1)
50	239.3(1.6)	242.1(1.6)	243.9(2.6)	264.2(1.2)	274.3(3.6)	268.4(1.9)	262.5(1.6)
75	268.1(2.0)	271.6(1.4)	270.1(2.0)	288.3(1.6)	299.6(3.1)	293.7(2.7)	288.3(1.9)
90	294.1(2.4)	295.7(1.4)	293.3(1.7)	310.5(1.9)	321.0(4.0)	316.2(4.8)	312.0(4.2)
95	309.7(2.2)	308.3(2.7)	306.6(2.4)	323.6(3.4)	333.1(4.9)	330.5(11.0)	327.8(5.4)
HISPANIC STUDENTS[1]							
Mean	0.0(0.0)	252.4(3.6)	261.4(2.7)	268.1(2.9)	270.8(4.3)	274.8(3.6)	271.2(3.7)
St. Dev.	0.0(0.0)	42.0(2.2)	40.1(1.4)	39.7(1.5)	37.7(2.0)	40.7(2.7)	43.7(1.8)
Percentiles							
5	0.0(0.0)	184.4(3.7)	194.3(7.8)	201.5(2.4)	204.2(11.7)	205.9(11.1)	192.8(7.2)
10	0.0(0.0)	197.1(4.9)	208.2(3.7)	216.6(2.9)	218.0(7.4)	224.3(12.0)	213.1(9.7)
25	0.0(0.0)	225.4(5.9)	235.3(5.0)	241.5(2.6)	246.4(5.9)	250.4(8.3)	240.7(8.7)
50	0.0(0.0)	252.8(3.7)	262.6(3.5)	268.6(3.1)	273.6(5.1)	276.3(3.2)	275.0(4.7)
75	0.0(0.0)	279.4(3.0)	288.6(3.2)	295.4(3.9)	297.9(7.1)	302.6(4.9)	303.3(6.5)
90	0.0(0.0)	306.7(6.1)	312.6(3.0)	318.3(6.1)	315.9(18.1)	326.5(3.2)	326.5(4.2)
95	0.0(0.0)	320.8(6.8)	325.1(3.4)	332.3(7.7)	328.0(8.6)	339.4(11.2)	336.6(4.6)

[1] No data were available for Hispanic students in 1971.

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find picture fact	1992	43.1(1.5)	53.9(1.9)	31.8(2.6)	41.1(1.6)	45.9(4.9)	54.3(7.7)
	1990	46.8(1.8)	52.3(3.0)	41.4(2.5)	44.2(2.1)	54.6(4.2)	54.0(7.4)
	1988	43.1(1.9)	54.6(3.0)	30.1(2.6)	41.3(2.3)	57.0(4.8)	37.5(5.6)
	1984	57.2(1.1)	65.5(1.4)	47.9(1.7)	56.5(1.2)	62.8(3.1)	52.0(5.6)
Insect communication fact	1992	67.7(2.1)	63.3(2.2)	72.3(3.1)	71.5(2.2)	51.6(4.7)	58.5(9.6)
	1990	69.2(2.3)	67.4(3.4)	71.0(2.7)	73.3(2.4)	51.8(6.5)	63.2(5.9)
	1988	67.5(2.5)	68.6(3.4)	66.3(3.0)	70.7(2.9)	53.8(5.4)	56.0(6.2)
	1984	65.4(1.4)	63.0(1.8)	68.0(1.8)	69.5(1.5)	49.5(3.2)	50.0(7.3)
Insect gender fact	1992	58.3(2.3)	54.2(2.2)	62.8(3.4)	61.1(2.7)	48.5(5.1)	51.3(6.6)
	1990	55.6(2.1)	50.4(2.8)	60.7(2.9)	60.3(2.6)	37.9(5.0)	48.5(7.9)
	1988	57.4(2.3)	56.0(2.6)	59.0(3.0)	58.3(2.6)	53.5(6.0)	50.1(4.7)
	1984	56.2(1.4)	54.0(2.1)	58.8(1.8)	58.3(1.4)	47.4(3.7)	51.6(7.5)
Insect anatomy	1992	65.6(2.3)	57.3(2.7)	74.5(3.6)	67.5(2.5)	60.3(4.2)	54.6(5.4)
	1990	65.9(2.5)	63.7(3.2)	68.2(2.9)	68.8(3.3)	56.0(5.1)	58.2(5.3)
	1988	66.7(2.3)	66.2(3.3)	67.4(2.8)	68.5(2.7)	55.0(3.4)	66.9(3.7)
	1984	62.5(1.1)	58.5(1.6)	67.0(1.5)	65.3(1.2)	53.0(3.6)	45.1(6.5)
Dog picture: Best description	1992	93.9(0.9)	91.5(1.5)	96.5(1.0)	95.5(1.0)	89.8(3.0)	86.5(4.3)
	1990	94.3(1.0)	93.6(1.4)	95.1(1.4)	95.3(1.0)	89.0(3.5)	95.2(2.5)
	1988	95.0(1.2)	95.8(1.2)	94.0(1.8)	95.2(1.4)	94.1(2.4)	93.4(3.6)
	1984	93.9(0.6)	93.2(0.7)	94.7(0.8)	94.9(0.6)	90.8(1.8)	88.5(3.8)
Nut story: Plan	1992	80.2(1.7)	75.0(2.3)	85.6(2.6)	81.9(1.9)	70.2(4.4)	78.5(5.4)
	1990	79.8(1.7)	79.6(2.7)	80.1(2.1)	85.0(1.7)	62.3(5.1)	71.5(5.6)
	1988	83.3(1.6)	80.2(2.1)	86.8(2.1)	85.6(1.9)	75.3(4.6)	74.0(4.6)
	1984	79.2(1.1)	75.0(1.6)	83.8(1.4)	82.2(1.3)	68.1(3.3)	68.6(4.7)
Nut story: Problem	1992	48.6(1.8)	45.0(2.3)	52.3(3.0)	53.0(1.9)	34.0(3.9)	33.0(4.5)
	1990	51.1(2.2)	49.1(2.9)	53.0(2.6)	56.8(2.6)	29.0(4.4)	40.1(6.4)
	1988	54.4(2.4)	52.8(3.2)	56.3(3.1)	58.1(2.8)	34.0(4.5)	50.8(7.7)
	1984	51.7(1.3)	52.2(1.6)	51.1(2.0)	56.7(1.5)	29.8(3.1)	38.0(4.7)
Nut story: Goal	1992	70.3(2.0)	66.3(2.2)	74.5(3.0)	73.2(2.3)	60.4(4.4)	55.9(7.6)
	1990	68.2(2.4)	65.6(2.9)	70.7(2.8)	72.3(2.6)	54.6(5.3)	60.2(5.4)
	1988	70.4(2.1)	67.0(3.1)	74.3(2.4)	73.2(2.4)	62.8(7.9)	50.0(5.6)
	1984	67.1(1.1)	64.3(1.6)	70.2(1.4)	69.4(1.5)	57.5(3.5)	57.7(6.5)
Nut story: Outcome	1992	59.7(2.2)	53.9(3.4)	65.7(2.5)	63.0(2.5)	49.1(5.4)	52.9(5.2)
	1990	58.1(2.4)	57.5(3.2)	58.8(2.8)	63.9(2.5)	37.8(5.6)	48.5(6.5)
	1988	60.9(2.2)	58.9(3.3)	63.3(2.4)	66.2(2.4)	37.0(4.0)	43.3(9.4)
	1984	58.7(1.3)	57.1(1.6)	60.5(2.0)	62.8(1.7)	44.5(3.5)	42.8(4.3)
History: Definition	1992	54.8(1.6)	51.2(2.8)	58.3(1.9)	59.3(1.9)	37.4(3.3)	47.1(4.8)
	1990	54.9(1.7)	50.8(2.1)	59.4(2.5)	62.1(2.0)	25.7(6.0)	39.2(6.5)
	1988	57.7(3.1)	52.6(4.2)	62.5(3.9)	63.1(3.6)	39.1(5.0)	35.4(9.9)
	1984	56.7(1.4)	53.6(1.9)	59.9(1.8)	62.8(1.8)	37.1(2.3)	37.2(3.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
History: Survival	1992	49.5(1.4)	49.5(2.3)	49.4(2.1)	53.8(1.7)	31.5(3.9)	41.1(6.4)
	1990	45.1(1.9)	46.0(2.7)	44.2(2.9)	48.6(2.0)	31.4(5.4)	34.1(6.4)
	1988	46.3(2.1)	46.7(3.8)	46.0(3.0)	48.8(2.7)	32.1(3.8)	38.8(5.5)
	1984	50.3(1.6)	50.9(1.8)	49.7(1.9)	53.1(1.9)	38.9(2.4)	42.8(3.6)
History: Location	1992	40.7(2.2)	43.6(3.1)	37.9(2.6)	42.4(2.4)	34.2(5.5)	34.8(7.2)
	1990	36.8(1.8)	35.2(2.6)	38.6(3.1)	38.5(2.4)	29.3(3.7)	38.2(5.9)
	1988	36.6(2.6)	36.3(3.7)	36.9(2.8)	37.6(2.6)	27.3(6.7)	41.3(8.3)
	1984	39.2(1.3)	40.6(1.8)	37.7(1.2)	40.8(1.4)	32.2(2.2)	35.7(7.6)
History: Main purpose	1992	35.7(2.0)	38.3(2.6)	33.2(2.4)	36.2(1.8)	31.3(5.2)	33.6(8.1)
	1990	36.0(1.8)	35.7(2.7)	36.3(2.6)	38.2(2.1)	27.4(5.4)	24.7(5.5)
	1988	38.0(2.4)	36.6(3.1)	39.3(2.8)	38.7(3.0)	28.8(3.9)	36.0(5.9)
	1984	32.1(1.1)	31.0(1.5)	33.3(1.4)	34.0(1.4)	23.4(1.6)	27.9(5.2)
Reason for Yvonne's dilemma	1992	81.5(1.5)	77.6(2.3)	85.3(1.8)	84.6(1.7)	68.5(4.5)	75.1(5.1)
	1990	82.2(1.5)	79.5(2.2)	85.0(2.2)	84.7(1.6)	69.4(4.8)	77.8(4.1)
	1988	82.4(1.9)	78.9(2.7)	85.6(2.7)	84.6(2.5)	73.9(4.1)	70.4(6.9)
	1984	83.3(1.0)	79.0(1.4)	87.7(1.0)	86.8(1.2)	72.0(2.3)	69.4(4.7)
Fly story: Problem	1992	9.9(1.0)	11.3(1.7)	8.7(1.3)	9.1(1.1)	13.3(3.3)	13.9(6.2)
	1990	9.0(1.1)	8.9(1.4)	9.1(1.6)	8.9(1.3)	10.0(2.6)	6.3(3.4)
	1988	10.9(1.5)	8.4(2.2)	13.3(2.1)	12.2(1.9)	9.2(2.2)	6.3(3.4)
	1984	9.6(0.7)	10.6(1.0)	8.6(0.9)	9.4(0.7)	7.5(1.6)	12.8(2.0)
Fly story: Resolution	1992	16.5(1.3)	20.0(2.2)	13.1(1.5)	15.7(1.5)	17.2(3.3)	21.5(5.0)
	1990	19.1(1.7)	17.1(2.2)	21.2(2.4)	20.2(1.9)	18.1(4.8)	10.2(4.7)
	1988	16.1(1.4)	16.0(2.3)	16.2(2.0)	16.2(1.7)	18.8(2.1)	10.6(4.3)
	1984	15.3(1.0)	16.4(1.3)	14.1(1.3)	14.8(1.0)	15.2(2.1)	15.2(3.0)
Dog poem: Main idea	1992	65.6(1.7)	61.7(2.6)	69.4(2.2)	71.7(1.8)	42.5(4.8)	54.2(5.9)
	1990	65.3(2.0)	60.9(2.9)	69.9(2.7)	72.0(2.2)	38.9(5.5)	57.2(6.4)
	1988	69.5(2.3)	65.4(3.8)	73.3(2.2)	73.7(2.9)	50.1(4.2)	54.7(8.3)
	1984	67.8(1.3)	62.5(2.0)	73.4(1.3)	73.6(1.6)	46.8(3.2)	50.8(3.4)
Dog poem: Resolution	1992	69.7(1.6)	64.9(2.3)	74.3(2.0)	75.2(1.9)	51.1(5.2)	57.9(5.5)
	1990	67.1(2.3)	64.1(2.7)	70.4(3.6)	74.8(2.1)	38.2(5.9)	47.5(8.0)
	1988	68.4(2.8)	64.2(4.2)	72.3(3.1)	72.8(3.0)	53.1(4.7)	53.2(7.5)
	1984	69.7(1.2)	65.4(1.6)	74.1(1.3)	73.9(1.3)	53.8(2.8)	58.5(3.6)
Flying: 1st machine	1992	29.8(1.8)	29.6(2.7)	30.1(1.9)	34.3(2.3)	13.4(2.4)	24.5(4.3)
	1990	29.3(1.9)	28.5(2.4)	30.1(2.4)	33.5(2.4)	15.8(3.3)	12.3(4.6)
	1988	29.9(1.7)	29.2(2.1)	30.5(2.9)	33.0(2.3)	17.5(4.1)	25.2(4.8)
	1984	29.3(1.3)	29.9(1.6)	28.6(1.6)	32.3(1.6)	15.1(1.7)	23.4(5.0)
Flying: Types of planes	1992	41.9(1.7)	44.2(2.3)	39.7(2.5)	44.9(2.3)	32.7(4.1)	28.5(6.1)
	1990	35.9(2.4)	32.0(2.3)	40.2(3.9)	38.6(2.6)	21.9(5.0)	40.2(6.1)
	1988	39.1(2.4)	37.9(2.7)	40.2(3.3)	41.1(2.8)	29.6(4.2)	34.3(8.4)
	1984	36.2(1.2)	37.3(1.7)	35.2(1.5)	39.5(1.5)	21.2(3.2)	30.9(4.0)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Flying: Differences	1992	44.9(1.9)	45.9(2.8)	43.8(2.6)	49.3(2.2)	26.7(5.3)	39.1(7.0)
	1990	43.3(2.2)	44.0(2.8)	42.4(3.1)	48.2(2.4)	24.2(4.8)	36.1(6.2)
	1988	45.3(2.0)	44.5(3.8)	46.0(3.0)	49.0(2.4)	30.9(4.5)	33.4(5.7)
	1984	40.5(1.5)	42.1(2.0)	39.0(1.6)	44.7(1.5)	21.7(2.2)	28.9(6.3)
Folk story: Inferring detail	1992	41.6(1.9)	39.6(2.8)	43.6(2.4)	44.8(2.0)	33.1(6.0)	32.5(5.8)
	1990	38.9(2.2)	36.3(2.6)	41.7(3.5)	42.8(2.7)	27.0(4.3)	17.6(4.8)
	1988	41.8(2.7)	37.8(3.7)	45.5(2.9)	45.5(3.1)	25.0(4.5)	26.3(6.6)
	1984	42.0(1.2)	40.5(1.5)	43.5(1.7)	45.4(1.4)	26.2(2.8)	28.3(4.3)
Folk story: Character trait	1992	38.3(1.8)	36.4(2.4)	40.3(2.6)	40.8(2.3)	29.9(3.3)	26.4(5.9)
	1990	38.9(1.9)	35.7(2.1)	42.5(2.8)	42.2(2.0)	24.6(5.1)	30.2(5.8)
	1988	43.2(1.9)	39.1(4.0)	47.1(3.7)	45.0(1.9)	36.3(4.5)	41.4(7.3)
	1984	39.9(1.5)	38.7(2.2)	41.0(1.7)	41.7(1.5)	32.2(3.2)	29.3(8.2)
Folk story: Character action	1992	32.0(1.8)	32.5(2.6)	31.6(2.6)	34.7(2.2)	24.1(4.0)	22.5(4.5)
	1990	29.9(1.7)	26.2(2.3)	34.0(3.1)	32.5(2.3)	20.3(3.6)	22.2(5.5)
	1988	27.9(2.0)	27.0(2.5)	28.8(3.6)	29.2(2.3)	21.9(3.9)	27.2(5.8)
	1984	29.8(0.9)	28.8(1.7)	30.8(1.8)	31.6(1.2)	21.0(2.5)	27.7(4.5)
Folk story: Major event	1992	48.5(2.0)	44.6(2.8)	52.4(2.7)	53.8(2.4)	31.3(5.3)	33.6(8.1)
	1990	50.1(1.9)	45.3(2.0)	55.3(3.6)	53.4(2.1)	39.1(6.1)	34.5(***)
	1988	50.4(2.3)	47.8(3.3)	53.0(3.2)	53.2(2.6)	34.5(5.1)	45.5(7.4)
	1984	47.5(1.3)	46.8(1.7)	48.1(2.1)	49.6(1.3)	37.4(3.4)	38.5(7.0)
Define nonsense word "habbies"	1992	73.1(1.8)	71.3(2.9)	74.8(2.2)	76.6(1.9)	58.7(5.8)	70.1(7.1)
	1990	73.5(2.0)	69.8(2.6)	77.6(2.3)	75.7(2.4)	63.4(6.2)	67.4(7.4)
	1988	73.5(2.4)	68.8(3.4)	78.0(3.1)	76.7(3.3)	60.0(4.3)	64.0(5.6)
	1984	73.1(1.1)	71.9(1.6)	74.4(1.5)	76.8(1.2)	50.4(3.3)	71.8(3.0)
Puzzle: Description of bird	1992	81.4(1.7)	77.5(2.5)	85.0(1.9)	85.7(1.9)	69.0(4.1)	68.8(6.4)
	1990	80.7(1.8)	78.2(2.6)	83.4(2.1)	85.3(1.7)	58.9(5.9)	70.9(7.8)
	1988	83.9(2.5)	83.5(3.0)	84.2(2.8)	86.3(3.1)	73.6(4.4)	76.3(8.2)
	1984	78.7(1.3)	75.4(2.0)	82.0(1.4)	82.9(1.3)	56.6(5.0)	70.4(4.2)
Science: Research	1992	22.3(1.9)	23.4(2.9)	21.1(2.1)	22.3(2.5)	18.8(4.7)	19.7(5.7)
	1990	22.6(1.8)	21.9(2.3)	23.4(2.7)	25.1(2.1)	13.4(4.5)	15.9(4.3)
	1988	21.7(1.8)	16.9(2.8)	26.4(2.7)	22.6(2.2)	19.0(4.9)	12.0(6.9)
	1984	23.6(1.2)	23.4(2.0)	23.7(1.6)	24.4(1.4)	21.0(3.4)	19.5(4.1)
Science: Evidence	1992	9.5(1.1)	7.8(1.6)	11.2(1.7)	8.7(1.0)	15.9(4.0)	2.4(1.7)
	1990	11.4(1.3)	11.2(1.8)	11.6(1.6)	11.9(1.6)	9.4(2.8)	10.2(5.1)
	1988	10.0(1.5)	9.2(2.0)	10.7(1.8)	11.1(1.9)	9.3(2.0)	2.2(1.8)
	1984	11.4(0.9)	11.9(1.6)	10.8(1.1)	12.2(1.0)	6.3(1.6)	9.7(2.1)
Science: Area of study	1992	28.6(1.6)	26.8(2.3)	30.6(2.6)	32.1(2.1)	20.0(3.5)	17.5(3.8)
	1990	29.0(2.0)	29.2(2.6)	28.7(2.8)	31.8(2.1)	20.8(4.8)	14.1(4.3)
	1988	32.9(2.0)	33.6(3.3)	32.3(2.5)	35.4(2.2)	21.4(4.2)	23.2(8.2)
	1984	25.9(1.5)	26.7(1.7)	25.3(1.9)	27.6(1.8)	19.4(2.4)	17.5(3.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Timothy story: Recall setting	1992	85.1(1.4)	81.9(2.0)	88.6(1.7)	88.4(1.3)	75.9(3.1)	77.4(7.1)
	1990	83.0(1.5)	80.4(2.0)	85.6(2.1)	84.2(1.8)	82.3(4.0)	71.2(6.7)
	1988	84.8(1.5)	82.0(2.0)	87.5(1.8)	86.3(1.5)	76.1(4.8)	84.6(4.2)
	1984	85.2(0.8)	81.9(1.5)	88.2(0.9)	86.9(0.8)	80.8(2.4)	73.7(2.8)
Myth: Exaggeration	1992	35.1(2.3)	35.0(3.4)	35.1(2.7)	38.3(2.4)	21.8(4.2)	35.3(7.6)
	1990	37.5(2.2)	39.3(2.9)	35.7(3.4)	40.6(2.6)	30.3(6.1)	19.5(6.4)
	1988	36.4(2.5)	39.5(2.8)	33.4(3.5)	38.4(3.0)	26.5(5.2)	35.7(6.4)
	1984	33.6(1.4)	32.6(1.5)	34.5(1.9)	36.7(1.7)	18.7(3.2)	20.1(2.9)
Two meanings of "bats"	1992	76.5(1.5)	73.3(2.5)	79.9(1.7)	80.8(1.7)	64.7(3.8)	67.5(5.8)
	1990	76.3(1.9)	74.9(2.8)	77.8(2.6)	82.6(2.0)	53.8(5.8)	56.3(9.6)
	1988	75.9(2.4)	73.9(3.5)	77.8(2.8)	79.5(2.4)	57.9(4.9)	70.4(8.3)
	1984	73.1(1.5)	67.7(2.0)	78.1(1.6)	77.5(1.7)	53.2(3.4)	59.7(3.2)
Biography: Honors	1992	52.2(1.9)	46.0(2.1)	58.9(3.4)	57.4(2.2)	30.5(3.7)	43.7(7.3)
	1990	52.7(2.0)	48.2(3.1)	57.4(2.8)	57.5(2.7)	34.2(3.9)	30.2(5.3)
	1988	58.0(2.7)	57.1(3.9)	58.9(3.4)	62.0(2.9)	39.9(5.6)	44.1(6.5)
	1984	53.6(1.5)	48.4(2.0)	58.6(2.1)	57.3(1.8)	34.7(2.9)	42.5(6.8)
Biography: Accomplishments	1992	59.1(1.7)	53.7(2.8)	65.1(2.8)	64.4(2.0)	39.8(5.2)	43.2(7.5)
	1990	59.4(2.2)	56.2(3.0)	62.6(3.1)	63.2(2.9)	44.6(5.1)	46.5(6.6)
	1988	60.0(2.3)	59.0(2.8)	61.0(2.9)	62.7(2.6)	46.5(5.3)	52.8(4.7)
	1984	54.9(1.7)	47.7(2.2)	61.5(2.2)	59.0(2.0)	34.2(3.8)	37.8(4.2)
Boxball: Fact	1992	53.8(1.9)	50.4(2.9)	57.4(2.5)	58.0(2.3)	36.5(4.6)	45.0(7.8)
	1990	52.0(2.0)	50.8(3.0)	53.1(3.4)	53.5(2.3)	48.3(4.6)	39.0(5.9)
	1988	50.1(2.9)	46.3(3.6)	54.1(3.3)	50.9(3.0)	45.0(7.2)	46.8(***)
	1984	51.8(1.5)	49.0(1.9)	54.4(2.2)	55.1(1.7)	39.8(4.3)	39.3(6.8)
Boxball: Central purpose	1992	54.3(1.6)	52.8(2.3)	55.9(2.3)	59.5(1.6)	36.2(5.1)	37.4(8.2)
	1990	50.4(2.3)	51.4(2.6)	49.4(3.2)	56.1(2.9)	32.0(3.9)	30.0(4.2)
	1988	53.2(2.9)	51.7(3.5)	54.8(3.9)	57.3(3.3)	35.8(4.5)	48.9(***)
	1984	49.2(1.3)	46.0(1.5)	52.2(1.7)	53.0(1.4)	35.1(2.9)	32.6(4.8)
Boxball: Sequence	1992	44.1(1.7)	48.1(2.1)	39.9(2.2)	48.5(1.9)	24.5(4.0)	30.9(7.7)
	1990	35.4(2.2)	40.5(3.3)	30.2(2.9)	39.1(2.7)	26.2(5.2)	14.9(3.8)
	1988	40.5(2.2)	44.5(3.2)	36.3(2.4)	44.6(2.9)	26.3(3.9)	27.5(5.4)
	1984	38.3(1.1)	41.0(1.7)	35.7(1.8)	42.6(1.4)	23.1(2.8)	24.9(4.1)
Boxball: Main idea	1992	36.5(1.9)	32.9(3.0)	40.5(2.5)	41.4(2.1)	17.2(5.1)	23.1(4.2)
	1990	35.9(1.7)	31.1(2.4)	40.8(2.6)	40.4(2.2)	20.4(3.8)	21.8(5.6)
	1988	35.5(1.9)	35.4(2.3)	35.6(2.7)	37.6(2.4)	26.4(4.1)	37.9(6.5)
	1984	36.8(1.2)	35.6(1.5)	38.1(1.7)	39.6(1.4)	23.2(2.4)	33.9(5.0)
Boxball: Supporting idea	1992	59.3(2.1)	59.8(2.8)	58.8(3.0)	65.3(2.3)	35.8(5.0)	47.6(5.3)
	1990	55.2(1.5)	57.7(2.5)	52.5(2.5)	59.6(1.8)	37.1(4.9)	44.8(5.9)
	1988	59.9(2.0)	63.0(2.9)	56.7(3.3)	65.9(1.8)	37.6(4.8)	45.4(***)
	1984	54.7(1.3)	53.1(2.2)	56.2(1.8)	59.6(1.6)	34.6(2.8)	37.2(5.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Civics: Document description	1992	19.4(1.9)	17.5(2.4)	21.5(2.8)	21.7(2.3)	11.9(2.6)	12.4(4.2)
	1990	17.4(1.6)	18.3(2.2)	16.5(2.3)	18.8(1.9)	14.4(3.5)	10.6(3.8)
	1988	18.8(1.4)	16.6(2.2)	21.1(2.0)	17.7(1.9)	18.4(4.2)	24.6(7.0)
	1984	16.9(1.1)	16.1(1.3)	17.7(1.4)	17.8(1.3)	14.6(2.3)	10.1(2.8)
Civics: Importance of court	1992	45.4(2.0)	40.2(2.5)	51.0(2.7)	46.6(2.5)	36.3(4.7)	47.6(7.7)
	1990	43.4(2.0)	44.2(3.0)	42.6(2.8)	43.2(2.4)	40.6(6.2)	48.5(6.0)
	1988	48.8(2.3)	44.8(3.0)	52.9(3.2)	49.7(2.4)	47.1(7.9)	41.8(8.7)
	1984	45.6(1.5)	45.8(1.9)	45.4(1.7)	46.3(1.6)	43.5(3.3)	35.9(7.6)
Civics: Vocabulary	1992	6.0(1.0)	7.7(1.7)	4.3(1.1)	5.2(1.1)	8.4(2.3)	6.2(3.3)
	1990	5.9(1.0)	7.1(1.6)	4.6(1.3)	5.5(1.2)	8.1(3.7)	4.9(2.5)
	1988	7.6(1.1)	6.6(1.3)	8.7(1.9)	5.8(1.1)	11.0(4.0)	17.3(4.2)
	1984	6.8(0.6)	7.3(1.0)	6.4(0.9)	6.5(0.6)	8.6(1.7)	6.9(3.1)
Define nonsense word "tup"	1992	62.3(2.0)	58.2(2.4)	66.8(3.0)	67.2(2.3)	40.5(5.4)	51.4(6.1)
	1990	61.7(1.9)	60.3(2.7)	63.2(2.5)	66.5(2.0)	40.1(5.8)	60.7(6.0)
	1988	62.4(2.5)	62.0(3.2)	62.8(2.8)	64.4(2.9)	52.2(6.0)	56.6(***)
	1984	57.9(1.6)	53.7(2.3)	61.9(1.9)	62.4(1.8)	37.9(3.5)	46.0(5.1)
U.S. History: Transportation	1992	58.0(2.1)	56.1(2.8)	60.1(2.8)	63.2(2.1)	37.1(5.9)	50.5(7.1)
	1990	53.2(2.7)	49.6(3.7)	57.0(3.4)	55.6(3.2)	43.7(7.0)	51.5(7.8)
	1988	61.1(2.2)	58.2(2.8)	64.1(2.8)	64.5(2.6)	45.7(4.7)	57.3(9.1)
	1984	53.4(1.6)	50.7(2.2)	56.0(2.1)	59.0(1.9)	32.0(3.0)	35.0(7.3)
U.S. History: Vocabulary	1992	32.6(2.3)	31.3(3.3)	34.0(2.4)	36.5(2.4)	17.1(4.6)	20.3(5.8)
	1990	36.5(2.0)	35.8(3.2)	37.2(2.4)	41.3(2.6)	23.9(4.1)	10.5(3.9)
	1988	33.0(2.5)	32.3(3.2)	33.8(3.2)	33.4(2.9)	27.1(4.2)	34.6(7.9)
	1984	34.7(1.5)	33.4(2.1)	36.0(1.8)	38.6(1.9)	18.3(2.9)	23.0(4.7)
Puzzle: Description of chair	1992	89.6(1.0)	85.9(1.6)	93.6(1.2)	92.9(1.1)	74.3(4.8)	83.7(4.3)
	1990	90.3(1.3)	85.6(2.2)	95.2(1.1)	91.8(1.3)	81.6(4.8)	90.1(4.2)
	1988	89.5(1.5)	88.0(2.0)	91.2(1.9)	91.6(1.7)	80.6(3.8)	86.1(6.5)
	1984	91.8(0.7)	89.7(1.0)	94.0(0.9)	92.7(0.7)	86.5(2.6)	90.8(2.2)
Character trait: Toy	1992	60.9(2.0)	56.4(2.8)	65.9(2.6)	64.4(2.2)	46.7(5.5)	52.4(5.6)
	1990	63.4(2.1)	58.0(3.5)	69.0(2.3)	69.8(2.3)	44.5(5.3)	37.8(4.3)
	1988	58.9(1.9)	53.6(3.2)	64.5(2.7)	62.6(2.2)	45.3(6.0)	51.1(***)
	1984	60.7(1.4)	57.4(1.6)	64.1(1.7)	63.7(1.5)	48.4(3.2)	49.0(***)
Frontier women: Description	1992	53.7(1.7)	49.5(2.2)	58.3(2.4)	59.6(2.0)	27.2(4.5)	42.8(5.9)
	1990	52.4(1.9)	45.9(2.5)	59.2(3.1)	56.8(2.1)	36.0(4.6)	37.4(6.4)
	1988	53.9(2.1)	50.5(3.4)	57.3(2.5)	59.6(2.5)	29.4(4.3)	43.9(6.9)
	1984	56.3(1.4)	52.5(2.0)	60.2(1.9)	60.4(1.4)	40.7(3.6)	38.9(8.4)
Frontier women: Activities	1992	49.3(1.8)	45.8(2.8)	53.1(2.5)	52.7(2.0)	33.5(5.1)	47.7(9.0)
	1990	44.8(2.0)	40.0(2.9)	49.7(2.7)	46.2(2.4)	44.8(5.7)	25.7(6.2)
	1988	42.8(1.9)	38.8(2.9)	46.9(2.6)	44.7(2.2)	36.2(4.3)	29.6(8.1)
	1984	47.1(1.1)	45.6(1.4)	48.7(1.7)	49.9(1.2)	36.1(2.8)	36.2(3.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Frontier women: Products	1992	63.0(1.5)	58.5(2.3)	67.9(2.5)	68.5(1.4)	39.6(3.8)	52.8(9.8)
	1990	59.9(2.3)	56.0(3.4)	64.0(3.1)	65.3(2.7)	42.3(4.7)	43.2(6.2)
	1988	60.0(2.1)	56.7(2.8)	63.4(3.0)	63.6(2.5)	45.0(4.4)	43.4(***)
	1984	65.4(1.0)	63.7(1.5)	67.2(1.4)	70.8(1.1)	45.6(3.6)	42.5(5.2)
Dog & shadow fable: Inference	1992	63.7(1.7)	59.1(2.2)	68.6(2.1)	69.2(1.7)	37.3(5.5)	57.7(4.9)
	1990	68.0(2.0)	65.8(2.8)	70.2(2.4)	74.0(2.2)	46.4(6.3)	51.5(6.6)
	1988	68.1(2.1)	65.2(3.7)	71.1(3.0)	71.6(2.2)	56.1(5.4)	48.2(9.5)
	1984	67.3(1.4)	66.3(1.7)	68.3(1.8)	72.6(1.5)	47.3(3.7)	45.2(5.7)
Dog & shadow fable: Moral	1992	57.1(2.0)	54.1(2.4)	60.3(3.0)	60.2(2.3)	46.6(5.3)	43.0(7.8)
	1990	59.8(2.3)	63.5(3.6)	56.0(2.7)	65.7(2.8)	37.4(5.5)	45.3(8.2)
	1988	62.9(2.4)	61.4(2.4)	64.4(3.7)	68.3(3.0)	40.8(5.8)	47.7(***)
	1984	61.5(1.5)	58.9(1.8)	64.2(2.2)	66.4(1.6)	44.5(3.2)	36.6(9.2)
Sandwich: Major idea	1992	46.5(1.9)	45.8(2.7)	47.3(2.7)	49.1(2.1)	38.5(4.7)	31.4(7.5)
	1990	43.1(1.8)	42.8(2.7)	43.5(2.7)	45.9(2.3)	33.1(5.7)	32.4(6.2)
	1988	41.0(2.4)	39.8(3.2)	42.4(3.1)	42.2(2.7)	37.6(6.1)	27.3(8.4)
	1984	42.0(1.6)	43.6(2.1)	40.4(2.1)	44.5(2.0)	30.4(1.8)	31.3(3.1)
Sandwich: Supporting idea	1992	62.3(1.8)	57.5(2.5)	67.5(2.6)	67.9(1.8)	38.6(6.1)	47.5(8.3)
	1990	61.4(1.9)	55.1(2.7)	68.2(2.7)	66.4(2.2)	46.9(6.2)	38.4(6.5)
	1988	56.5(3.0)	53.9(3.3)	59.1(3.7)	58.6(3.8)	41.9(6.2)	56.8(9.8)
	1984	65.0(1.3)	61.2(1.6)	68.9(1.5)	67.6(1.6)	53.2(3.8)	53.1(5.8)
Result of food chain	1992	66.4(2.1)	61.8(2.6)	71.5(2.4)	70.6(2.5)	48.6(6.8)	59.0(5.5)
	1990	68.1(2.1)	66.6(3.2)	69.6(2.4)	70.8(2.4)	57.7(7.1)	59.4(5.8)
	1988	68.1(1.9)	63.1(3.0)	73.1(2.7)	70.1(2.7)	55.9(5.8)	64.8(8.3)
	1984	66.3(1.2)	63.8(1.9)	68.8(1.6)	69.1(1.2)	56.0(3.4)	49.4(***)
Food chain main idea	1992	47.8(2.2)	44.4(2.5)	51.3(3.2)	52.3(2.4)	29.7(5.7)	35.9(8.5)
	1990	46.9(2.3)	42.3(3.6)	51.6(2.8)	49.0(2.2)	46.4(8.3)	31.4(5.4)
	1988	46.4(1.9)	45.3(2.7)	47.5(3.1)	48.3(1.9)	30.7(4.6)	43.8(***)
	1984	46.6(1.3)	45.8(2.0)	47.4(1.7)	49.3(1.5)	31.3(3.6)	35.2(4.6)
Best title for Scott story	1992	31.0(2.0)	31.0(2.8)	30.9(2.7)	30.8(2.2)	32.0(3.8)	30.7(8.2)
	1990	30.6(1.8)	30.5(1.9)	30.7(2.4)	31.2(2.2)	30.4(5.8)	28.0(5.9)
	1988	32.2(1.7)	26.0(1.9)	38.4(3.0)	33.7(2.3)	29.1(5.0)	27.3(7.4)
	1984	30.5(1.4)	29.8(1.7)	31.3(1.9)	31.1(1.7)	30.6(3.8)	22.1(4.7)
Scott story fact	1992	50.7(1.7)	45.1(2.5)	56.3(2.6)	52.0(1.9)	45.3(4.7)	43.3(7.0)
	1990	47.2(2.2)	42.9(2.7)	51.3(3.3)	49.6(2.5)	44.0(4.8)	41.2(5.0)
	1988	55.0(2.0)	46.8(3.0)	63.3(2.7)	56.4(2.6)	50.3(5.7)	54.2(6.6)
	1984	47.4(1.0)	43.9(1.6)	51.0(1.3)	49.0(1.3)	43.1(2.8)	39.2(4.2)
Scott story definition	1992	14.7(1.3)	14.9(1.8)	14.5(1.9)	15.0(1.6)	12.7(2.5)	14.1(6.5)
	1990	12.5(1.4)	10.7(1.8)	14.2(2.1)	13.3(1.5)	12.2(4.3)	2.0(1.9)
	1988	12.1(1.3)	11.6(1.7)	12.7(2.6)	12.4(1.6)	9.2(2.9)	19.0(5.8)
	1984	16.1(0.9)	15.6(0.9)	16.6(1.6)	16.1(0.9)	16.3(1.5)	10.8(2.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Snowman: Best description	1992	78.3(1.4)	73.6(2.1)	83.0(2.3)	82.1(1.7)	71.5(5.0)	59.2(5.9)
	1990	77.2(1.8)	72.8(2.5)	81.5(2.2)	79.0(2.1)	71.6(4.5)	66.9(5.0)
	1988	81.4(1.7)	80.9(2.5)	81.8(2.8)	84.2(2.2)	71.2(4.9)	68.4(6.7)
	1984	83.8(0.9)	82.0(1.1)	85.7(1.4)	85.6(1.1)	74.7(2.0)	80.4(5.8)
Character trait: Clown	1992	83.7(1.3)	79.8(2.3)	87.6(1.6)	88.4(1.6)	67.4(3.9)	70.6(4.9)
	1990	85.4(1.8)	82.1(2.8)	88.5(2.4)	86.1(2.0)	83.3(3.5)	88.4(5.2)
	1988	87.6(2.1)	81.8(4.7)	93.3(1.7)	88.4(2.4)	86.3(6.1)	76.7(8.7)
	1984	86.0(1.1)	82.1(1.8)	90.1(1.3)	87.8(1.3)	78.0(2.7)	82.1(4.7)
Nonsense word 1	1992	68.5(1.4)	68.3(2.2)	68.6(2.0)	73.2(1.6)	55.0(4.7)	47.9(7.8)
	1990	67.1(1.9)	65.7(2.6)	68.5(2.9)	70.8(2.0)	53.0(4.8)	58.0(6.1)
	1988	69.1(2.1)	67.5(3.5)	70.7(3.0)	72.0(2.7)	61.4(4.4)	44.9(8.7)
	1984	66.4(1.4)	63.9(1.5)	69.1(1.9)	69.2(1.5)	56.2(3.7)	58.9(8.1)
Fact about pet care	1992	31.4(1.7)	27.8(2.4)	35.0(2.3)	35.9(2.4)	16.5(3.8)	26.2(5.4)
	1990	28.5(1.9)	22.3(2.4)	34.5(2.3)	32.1(2.0)	19.3(4.5)	12.6(4.2)
	1988	34.8(2.4)	29.6(3.4)	40.0(2.2)	38.0(3.1)	24.1(4.7)	14.6(5.7)
	1984	35.6(1.3)	32.5(1.4)	38.8(1.7)	40.3(1.7)	21.7(2.6)	17.8(2.5)
Fact about health of pet	1992	44.2(1.5)	41.6(2.3)	46.7(2.1)	46.5(2.0)	41.3(5.0)	39.3(5.8)
	1990	40.0(1.7)	35.1(2.1)	44.6(3.3)	45.0(2.1)	24.8(4.6)	26.5(5.4)
	1988	40.1(1.8)	36.1(2.8)	44.1(3.1)	42.1(2.3)	33.7(4.9)	25.4(4.8)
	1984	42.8(1.1)	38.9(1.6)	46.9(1.9)	46.7(1.2)	30.4(2.8)	28.3(6.3)
Tooth poem: Speaker's identity	1992	73.5(1.9)	68.4(2.9)	78.4(2.4)	75.3(2.6)	72.3(3.5)	67.8(7.6)
	1990	70.7(1.7)	62.5(2.9)	78.5(2.4)	74.0(1.9)	57.3(5.0)	61.3(8.2)
	1988	70.1(2.5)	66.8(3.6)	73.4(2.8)	71.9(3.0)	57.8(5.4)	74.1(6.1)
	1984	70.0(1.4)	62.3(2.1)	78.0(1.4)	73.2(1.3)	57.7(4.3)	58.7(***)
Tooth poem: Major event	1992	33.5(1.8)	29.7(2.5)	37.1(2.2)	38.2(2.2)	15.0(4.2)	27.9(6.8)
	1990	33.8(1.5)	29.4(2.4)	38.1(2.8)	36.4(1.7)	21.4(4.6)	34.6(7.7)
	1988	37.0(2.4)	35.7(3.0)	38.3(4.0)	39.1(2.8)	28.4(6.3)	21.3(4.9)
	1984	36.1(1.4)	33.3(2.0)	39.0(1.8)	40.3(1.5)	22.2(2.3)	23.3(4.7)
Tooth poem: Vocabulary	1992	27.4(1.4)	28.4(2.3)	26.5(2.4)	30.8(1.6)	18.5(3.9)	10.2(4.5)
	1990	24.7(1.7)	21.8(2.5)	27.5(2.2)	27.1(2.0)	15.5(3.7)	26.2(9.7)
	1988	28.0(2.3)	29.7(2.0)	26.2(4.1)	29.7(2.6)	17.5(4.6)	25.7(6.2)
	1984	25.0(1.1)	25.6(1.3)	24.4(1.7)	27.2(1.2)	16.9(2.3)	20.2(5.4)
Advertisement for carrier	1992	43.4(1.6)	35.8(2.7)	51.6(2.4)	48.9(2.0)	26.7(3.6)	29.5(6.9)
	1990	43.0(2.0)	36.5(2.6)	49.9(3.3)	47.0(2.2)	29.3(4.1)	27.3(6.4)
	1988	45.7(1.9)	43.2(3.6)	48.0(2.6)	50.3(2.1)	23.4(3.8)	31.9(4.4)
	1984	45.4(1.4)	43.3(1.9)	47.5(1.6)	51.2(1.7)	27.1(2.0)	25.5(3.4)
Carrier job requirements	1992	60.6(1.6)	59.9(2.6)	61.3(2.5)	66.2(2.1)	39.8(3.9)	52.9(6.1)
	1990	62.3(2.0)	66.1(2.6)	58.2(2.8)	63.1(2.2)	57.8(4.9)	57.2(6.4)
	1988	55.8(2.1)	56.4(2.5)	55.2(3.4)	58.1(2.5)	47.7(6.7)	45.0(4.8)
	1984	61.2(1.0)	60.4(1.5)	62.0(1.3)	65.0(1.1)	49.5(2.7)	46.5(2.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Carrier job responsibilities	1992	54.2(1.9)	49.8(3.2)	58.8(2.7)	58.6(2.3)	41.3(3.9)	45.8(5.9)
	1990	51.7(2.3)	51.4(3.7)	52.1(3.0)	54.1(2.5)	44.0(5.5)	38.2(5.0)
	1988	53.7(2.3)	50.1(3.0)	57.3(3.3)	56.5(2.1)	42.5(5.7)	44.9(8.9)
	1984	48.7(1.2)	43.4(1.8)	54.0(1.3)	53.1(1.4)	33.3(2.1)	32.5(2.8)
Silky story fact	1992	68.8(1.5)	64.3(2.5)	73.7(2.0)	72.5(1.8)	57.6(4.5)	56.3(6.4)
	1990	73.1(2.0)	70.5(2.5)	75.9(2.8)	76.9(2.1)	64.8(4.9)	56.7(6.1)
	1988	71.1(2.7)	70.8(3.0)	71.3(3.2)	72.8(3.0)	60.1(4.9)	70.5(9.7)
	1984	72.7(1.1)	69.4(1.4)	75.9(1.4)	76.2(1.1)	59.0(3.1)	61.9(2.3)
History of gold rush fact	1992	29.6(1.6)	27.2(1.7)	32.2(2.2)	31.9(1.8)	24.1(2.9)	16.8(6.6)
	1990	29.4(1.7)	28.5(2.5)	30.3(2.8)	32.1(1.9)	24.7(4.4)	13.1(4.4)
	1988	37.7(2.9)	37.0(4.5)	38.5(3.2)	40.3(3.5)	24.1(5.8)	33.6(6.5)
	1984	30.0(1.1)	29.5(1.3)	30.5(1.3)	32.1(1.3)	21.8(1.9)	24.4(2.7)
Winnie drawing	1992	86.6(1.3)	85.0(1.9)	88.4(1.9)	90.3(1.1)	76.8(5.0)	80.4(6.8)
	1990	85.7(1.2)	84.6(2.1)	86.9(1.9)	86.6(1.5)	86.0(3.7)	72.7(6.6)
	1988	84.7(2.2)	84.8(3.2)	84.7(2.6)	86.3(2.6)	77.8(2.9)	80.9(5.3)
	1984	87.3(0.5)	87.1(0.8)	87.4(0.7)	89.8(0.6)	77.9(2.7)	80.6(1.6)
Angry poem: Resolution	1992	52.7(2.0)	49.0(3.1)	56.7(2.9)	56.6(2.4)	40.6(4.0)	39.9(6.3)
	1990	50.1(2.2)	48.2(3.1)	52.1(3.2)	56.3(2.7)	36.3(4.5)	17.6(3.1)
	1988	52.4(2.3)	53.3(3.1)	51.4(2.8)	56.0(2.8)	35.4(5.2)	45.2(6.1)
	1984	51.9(1.0)	49.4(1.5)	54.3(1.2)	57.6(1.2)	36.3(2.0)	26.1(3.5)
Stars article: Process	1992	49.7(1.9)	46.4(3.1)	53.2(2.7)	53.9(2.6)	30.7(3.2)	42.3(7.2)
	1990	44.9(2.1)	44.6(2.8)	45.1(2.9)	49.3(2.7)	31.6(5.6)	33.5(6.4)
	1988	51.9(2.3)	53.6(2.4)	50.2(3.8)	55.6(2.7)	38.9(4.7)	33.2(9.3)
	1984	50.6(1.4)	50.4(1.7)	50.8(1.7)	54.0(1.4)	39.3(3.3)	36.2(3.6)
Stars article: Central purpose	1992	51.4(1.9)	45.7(2.9)	57.7(2.9)	55.9(2.4)	34.7(5.2)	43.1(6.0)
	1990	54.4(2.1)	56.6(2.9)	52.2(3.1)	59.3(2.7)	35.0(5.6)	38.3(8.3)
	1988	57.7(2.8)	57.1(4.1)	58.2(3.4)	62.2(3.0)	33.0(4.5)	50.3(4.8)
	1984	48.1(1.3)	46.1(2.0)	50.0(1.4)	53.3(1.4)	28.5(2.9)	31.2(6.0)
Stars article: Evidence	1992	41.2(1.9)	36.6(2.7)	46.2(2.8)	45.0(2.3)	25.7(3.8)	38.0(8.8)
	1990	41.4(2.0)	45.3(2.7)	37.5(3.1)	43.4(2.4)	35.1(6.2)	23.8(5.3)
	1988	45.7(2.7)	43.9(3.4)	47.3(3.7)	48.3(2.5)	37.2(8.2)	32.1(5.0)
	1984	42.6(1.5)	41.8(1.9)	43.3(1.6)	46.4(1.6)	29.7(2.9)	25.3(4.6)
Sentence completion: "Wind"	1992	61.4(1.8)	59.6(2.7)	63.4(2.6)	66.5(2.3)	45.1(6.3)	48.9(9.0)
	1990	60.8(2.3)	60.3(3.4)	61.3(3.0)	63.3(3.1)	51.2(5.0)	48.1(7.0)
	1988	61.1(2.2)	61.6(4.5)	60.7(2.2)	64.7(2.6)	38.3(4.7)	56.6(7.5)
	1984	64.5(0.9)	62.2(1.6)	66.7(1.0)	68.7(1.0)	47.0(2.6)	55.2(4.6)
Reporter: Recall information	1992	60.4(1.3)	58.8(1.4)	62.1(2.1)	64.4(1.3)	46.1(3.4)	46.4(4.9)
	1990	61.3(1.6)	59.8(2.4)	62.8(1.8)	65.5(1.7)	43.8(4.8)	59.1(3.5)
	1988	64.4(1.5)	61.0(1.8)	68.1(2.2)	67.1(1.8)	50.9(3.9)	56.7(7.3)
	1984	59.1(1.3)	60.1(1.5)	58.1(1.6)	63.5(1.6)	43.1(2.8)	47.4(1.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Reporter: Change of style	1992	44.8(1.2)	43.4(1.5)	46.2(2.2)	48.8(1.6)	29.2(3.8)	38.4(4.6)
	1990	44.1(1.6)	43.4(2.0)	44.7(2.1)	48.7(2.1)	25.6(3.3)	36.3(4.1)
	1988	44.7(1.8)	44.9(2.3)	44.6(2.3)	46.6(2.0)	35.1(3.6)	38.9(3.9)
	1984	43.8(1.2)	43.7(1.7)	43.9(1.5)	47.1(1.4)	29.8(2.8)	37.5(1.9)
Reporter: Resolution	1992	65.9(1.3)	62.5(1.5)	69.4(1.9)	69.9(1.4)	52.1(3.9)	49.0(4.5)
	1990	62.8(1.9)	57.2(2.6)	68.6(2.4)	67.7(2.0)	43.6(4.3)	53.4(4.2)
	1988	65.0(1.8)	58.6(2.5)	71.7(2.1)	68.9(2.4)	47.9(3.4)	52.5(5.0)
	1984	64.4(1.1)	60.6(1.4)	68.1(1.6)	69.8(1.4)	44.3(2.9)	50.9(4.1)
Reporter: Reason for change	1992	50.1(1.4)	47.9(1.6)	52.4(2.2)	54.5(1.7)	31.4(2.7)	42.0(4.5)
	1990	50.6(1.8)	47.2(2.5)	54.1(2.1)	56.5(2.2)	28.3(5.9)	38.6(4.5)
	1988	50.0(1.7)	46.9(2.8)	53.2(1.8)	54.4(2.1)	30.6(3.4)	33.4(5.7)
	1984	49.7(1.1)	47.6(1.4)	51.8(1.6)	54.2(1.4)	35.2(2.5)	35.2(2.6)
Identifying science passage	1992	48.9(1.2)	48.7(1.9)	49.2(1.8)	52.6(1.5)	34.0(3.1)	33.7(5.8)
	1990	49.6(1.6)	48.1(2.1)	51.1(2.3)	54.3(1.9)	32.4(3.3)	42.1(5.9)
	1988	50.5(1.2)	51.0(2.1)	50.1(2.3)	54.1(1.5)	35.2(4.5)	36.2(5.2)
	1984	46.6(1.4)	46.7(2.0)	46.6(1.7)	51.5(1.5)	27.8(2.6)	36.5(2.9)
Author's viewpoint about dogs	1992	49.1(1.4)	49.3(2.0)	48.8(2.4)	52.4(1.7)	37.2(3.5)	39.6(2.8)
	1990	47.0(1.6)	43.8(2.6)	50.3(1.8)	49.4(1.9)	41.3(2.9)	36.5(4.9)
	1988	49.5(1.7)	47.1(2.5)	52.1(2.1)	52.0(1.9)	45.9(3.7)	28.6(5.1)
	1984	46.0(1.0)	44.2(1.3)	47.9(1.4)	48.4(1.1)	38.9(2.6)	35.9(3.1)
Skunk cabbage: Reason for name	1992	57.1(1.5)	54.4(1.8)	59.9(2.3)	61.3(1.8)	39.4(3.9)	50.2(3.9)
	1990	58.1(1.6)	54.9(2.2)	61.3(2.0)	63.7(1.8)	34.7(3.7)	48.4(4.1)
	1988	59.1(1.9)	57.7(2.9)	60.6(2.1)	63.1(2.2)	41.1(3.6)	45.8(5.4)
	1984	57.2(1.2)	55.5(1.6)	58.8(1.5)	62.6(1.6)	35.4(1.8)	43.3(3.1)
Skunk cabbage: Description	1992	51.3(1.3)	49.4(1.9)	53.3(1.8)	53.7(1.6)	43.5(2.8)	38.2(5.3)
	1990	52.2(1.9)	51.0(2.3)	53.5(2.5)	55.9(2.3)	38.7(3.2)	41.8(4.1)
	1988	51.0(2.0)	49.2(1.9)	53.0(3.2)	52.9(2.3)	41.1(3.3)	42.7(4.0)
	1984	49.1(1.1)	47.1(1.6)	51.1(1.6)	53.8(1.4)	34.3(2.7)	32.6(2.5)
Breathing: Result of breathing	1992	38.4(1.8)	39.1(1.8)	37.7(2.3)	41.1(2.2)	33.8(3.1)	21.1(3.5)
	1990	39.9(1.4)	41.9(1.9)	37.8(1.7)	41.8(1.6)	36.2(4.3)	35.9(5.8)
	1988	39.5(1.6)	40.4(2.7)	38.4(2.0)	39.5(1.9)	38.2(5.5)	44.1(4.8)
	1984	37.8(1.4)	38.7(1.6)	36.9(1.6)	39.8(1.4)	29.9(1.9)	34.6(8.2)
Breathing: Air moves to lungs	1992	44.6(1.5)	45.6(2.4)	43.6(1.8)	48.5(2.0)	31.4(2.9)	30.7(4.8)
	1990	45.0(1.9)	45.2(2.2)	44.8(2.4)	47.9(2.0)	33.7(4.6)	36.3(6.1)
	1988	45.1(1.9)	45.4(1.9)	44.9(3.0)	47.7(2.3)	34.4(3.4)	31.3(5.0)
	1984	44.3(1.5)	45.2(1.6)	43.4(1.9)	48.4(1.7)	32.0(2.5)	29.8(5.0)
Breathing: Function of sacs	1992	31.0(1.3)	32.5(1.7)	29.5(1.8)	32.7(1.7)	21.4(2.4)	33.0(4.7)
	1990	28.7(1.4)	26.8(1.9)	30.7(2.0)	29.5(1.6)	22.1(3.7)	30.4(3.4)
	1988	32.1(2.0)	31.2(2.1)	33.0(3.0)	33.4(2.3)	27.4(3.6)	27.2(4.9)
	1984	30.4(0.7)	33.0(1.4)	27.8(1.5)	31.7(1.0)	24.8(2.2)	29.0(3.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 9

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Breathing: Formation of CO_2	1992	28.0(1.5)	27.6(1.7)	28.4(2.1)	30.3(1.9)	19.7(1.8)	18.5(4.7)
	1990	27.4(1.6)	25.6(2.0)	29.4(2.3)	30.7(2.0)	17.9(2.3)	21.6(3.2)
	1988	25.6(1.8)	22.4(1.7)	29.0(2.5)	27.6(2.3)	16.3(2.0)	13.0(3.1)
	1984	26.3(1.1)	24.2(1.5)	28.4(1.1)	28.9(1.4)	18.0(1.9)	16.3(3.4)
Bullfight: Main idea	1992	58.0(2.1)	61.4(2.3)	54.5(3.4)	63.0(2.3)	43.6(4.2)	37.7(5.0)
	1990	53.5(2.5)	52.6(3.6)	54.5(3.2)	59.9(3.0)	32.8(5.3)	30.8(4.3)
	1988	57.0(1.9)	55.8(3.0)	58.1(3.3)	61.5(2.2)	39.5(5.1)	36.0(9.0)
	1984	53.0(1.2)	54.8(2.0)	51.2(1.7)	57.2(1.3)	37.8(3.5)	43.0(2.5)
Author's unhappy feelings	1992	79.3(1.7)	73.6(2.7)	85.1(2.0)	83.9(2.0)	63.8(4.5)	66.5(5.4)
	1990	77.0(1.9)	70.3(2.9)	84.3(1.8)	81.2(2.1)	62.0(4.3)	66.0(6.1)
	1988	84.4(1.8)	79.4(2.8)	89.2(1.9)	87.5(2.0)	74.0(5.9)	64.8(6.3)
	1984	81.1(1.2)	79.4(1.5)	82.7(1.6)	84.8(1.2)	70.4(3.1)	68.9(5.1)
Alien story: Character trait	1992	43.9(1.9)	40.2(2.4)	47.6(2.8)	47.3(1.9)	33.1(5.8)	34.4(6.4)
	1990	39.9(2.2)	36.2(2.8)	43.8(2.7)	45.2(2.5)	21.1(4.5)	22.4(7.0)
	1988	40.1(2.1)	34.8(2.8)	45.2(4.3)	45.2(2.5)	22.0(3.6)	23.3(6.5)
	1984	38.9(1.6)	36.5(2.2)	41.3(1.6)	43.1(2.1)	28.2(2.7)	21.1(2.1)
Alien story: Problem	1992	64.0(1.8)	62.6(2.5)	65.3(2.4)	69.6(2.0)	49.4(3.9)	39.7(5.0)
	1990	56.3(2.0)	49.5(2.9)	63.8(2.3)	59.5(2.2)	45.3(5.3)	43.8(6.5)
	1988	60.1(1.6)	55.5(2.2)	64.5(2.5)	64.7(2.0)	45.2(4.0)	43.5(7.8)
	1984	59.1(1.7)	59.7(2.0)	58.5(2.0)	63.1(1.8)	44.2(4.1)	49.7(3.2)
Alien story: Resolution	1992	47.4(1.8)	46.0(2.2)	48.8(2.7)	52.7(2.1)	27.5(4.8)	36.3(5.0)
	1990	43.1(2.4)	40.8(2.7)	45.5(3.6)	46.9(2.4)	29.3(5.1)	35.2(5.3)
	1988	41.5(2.0)	35.3(2.8)	47.4(3.0)	47.7(2.0)	22.0(3.9)	16.9(5.4)
	1984	39.9(1.6)	43.0(2.0)	37.0(1.8)	43.5(2.1)	28.1(2.9)	29.6(4.5)
Timothy story: Recall action	1992	68.2(1.5)	63.0(2.3)	73.6(2.4)	71.9(1.7)	57.9(3.9)	56.0(6.9)
	1990	65.6(1.9)	58.6(3.1)	73.2(2.3)	69.2(2.4)	58.0(4.3)	41.3(6.5)
	1988	68.1(2.4)	62.0(3.4)	73.9(3.4)	69.7(2.5)	63.3(5.6)	54.0(8.3)
	1984	66.7(1.3)	63.6(1.6)	69.7(1.7)	71.0(1.4)	55.8(3.2)	46.0(3.8)
Connect dots: Along a line	1992	68.4(1.7)	68.0(3.0)	68.8(2.2)	70.8(2.1)	61.5(5.4)	54.3(6.8)
	1990	70.8(1.9)	65.2(2.6)	76.9(2.4)	74.4(2.5)	58.1(4.0)	61.9(5.8)
	1988	75.8(1.8)	71.1(3.3)	80.2(2.6)	78.8(1.9)	59.6(4.8)	74.8(7.4)
	1984	70.1(1.4)	67.3(1.7)	72.7(1.8)	72.2(1.5)	67.3(2.9)	56.9(8.1)
Connect dots: Touching circles	1992	73.6(1.7)	71.6(2.5)	75.6(2.0)	77.0(1.8)	61.7(5.4)	70.1(6.7)
	1990	71.3(2.3)	65.4(3.1)	77.6(2.6)	76.3(2.8)	51.4(4.8)	59.1(6.8)
	1988	72.5(2.0)	70.0(2.5)	74.8(2.9)	75.9(2.1)	58.4(4.2)	55.5(8.2)
	1984	86.3(1.0)	85.0(1.4)	87.6(1.3)	87.8(1.0)	81.7(2.7)	83.1(5.7)
Connect dots: Write in circles	1992	85.0(1.1)	82.4(2.1)	87.6(1.9)	86.5(1.4)	77.5(4.8)	84.8(5.9)
	1990	82.7(1.7)	79.0(2.4)	86.5(1.8)	86.3(2.0)	68.8(5.2)	70.3(7.7)
	1988	86.1(1.6)	82.1(2.3)	89.8(2.3)	88.2(1.6)	74.8(3.8)	83.4(5.8)
	1984	88.0(0.7)	86.2(1.4)	89.7(1.0)	89.8(0.9)	81.9(1.9)	83.1(3.6)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Find picture fact	1992	52.2(2.0)	64.1(2.7)	41.1(3.1)	49.3(2.0)	57.1(5.5)	60.9(7.1)
	1990	56.3(2.5)	65.1(3.1)	47.4(3.2)	55.9(2.8)	56.2(6.1)	58.1(7.2)
	1988	59.6(2.2)	70.8(2.6)	48.7(3.6)	59.1(2.4)	59.2(4.6)	61.4(***)
	1984	70.0(0.9)	74.8(1.0)	64.7(1.3)	69.6(1.1)	73.3(3.3)	69.5(3.7)
Document: Phone calls	1992	47.1(2.2)	44.6(3.3)	49.4(3.2)	49.5(2.9)	34.7(4.7)	43.5(6.9)
	1990	45.1(2.0)	44.4(2.7)	45.9(2.6)	46.7(2.8)	42.8(5.4)	36.6(6.1)
	1988	46.6(1.7)	42.3(3.1)	50.8(3.0)	48.2(1.6)	37.4(5.2)	39.2(9.4)
	1984	47.2(1.2)	44.4(1.9)	50.3(1.8)	48.4(1.5)	40.5(2.5)	45.0(2.9)
Document: Phone services	1992	39.9(2.0)	35.8(3.0)	43.7(2.5)	41.9(2.2)	34.7(5.9)	25.3(6.9)
	1990	43.0(2.0)	35.7(2.5)	50.3(2.7)	44.4(2.5)	38.3(4.8)	35.8(5.7)
	1988	42.3(1.8)	38.6(2.6)	45.8(3.1)	42.7(1.9)	39.7(5.0)	46.6(8.4)
	1984	47.1(1.1)	41.1(1.6)	53.6(1.9)	48.4(1.2)	38.3(2.5)	45.9(5.0)
Coupon document: Limitations	1992	66.5(2.2)	66.7(2.5)	66.4(3.3)	71.0(2.3)	52.9(5.1)	58.0(7.1)
	1990	67.3(1.8)	63.0(2.9)	71.5(2.0)	70.7(2.0)	56.9(5.5)	54.9(6.9)
	1988	67.7(2.0)	65.4(2.9)	69.9(3.0)	70.9(2.4)	54.2(5.9)	58.9(6.8)
	1984	63.7(1.1)	60.2(1.6)	67.7(1.8)	67.2(1.2)	51.6(3.0)	51.1(3.2)
Coupon document: Expiration	1992	92.6(1.0)	90.2(1.5)	94.8(1.3)	93.9(1.1)	88.7(3.1)	89.8(4.5)
	1990	95.2(0.9)	93.9(1.4)	96.5(1.0)	96.7(0.7)	89.0(4.4)	95.4(2.5)
	1988	95.0(0.9)	93.6(1.5)	96.4(1.1)	96.0(1.1)	90.4(2.3)	94.6(4.2)
	1984	92.6(0.5)	91.4(0.9)	94.0(0.8)	93.3(0.6)	87.6(1.4)	93.4(2.4)
Coupon: Value	1992	44.9(2.2)	44.7(2.6)	45.2(3.0)	47.5(2.6)	40.4(4.5)	28.7(6.6)
	1990	45.4(2.1)	41.1(3.0)	49.6(2.4)	49.0(2.3)	33.4(6.0)	34.8(5.0)
	1988	45.9(2.1)	45.6(3.2)	46.2(3.3)	49.4(2.4)	30.9(3.5)	27.3(8.8)
	1984	47.7(1.2)	45.9(1.8)	49.6(1.6)	50.4(1.4)	35.7(2.9)	41.3(3.5)
Carad poem	1992	61.0(2.2)	54.2(3.2)	67.4(2.7)	64.4(2.8)	50.6(4.9)	53.5(6.9)
	1990	58.8(2.0)	56.9(3.0)	60.7(3.0)	62.3(2.1)	48.6(5.3)	36.7(7.3)
	1988	59.9(1.8)	57.1(3.0)	62.6(2.6)	65.0(2.1)	41.9(4.5)	33.2(8.4)
	1984	58.6(1.1)	55.3(1.5)	62.2(1.7)	61.8(1.2)	45.4(3.9)	49.8(2.9)
Nut story: Plan	1992	94.3(1.4)	93.1(2.0)	95.5(1.5)	97.0(1.1)	85.2(5.2)	96.2(3.2)
	1990	95.6(0.7)	93.8(1.3)	97.4(0.8)	95.7(0.9)	97.6(1.6)	90.9(3.7)
	1988	97.5(0.6)	95.8(1.3)	99.2(0.5)	97.5(0.7)	96.7(1.1)	100.0(0.0)
	1984	93.4(0.7)	90.7(0.9)	96.3(0.7)	94.2(0.7)	89.1(2.3)	92.7(1.6)
Nut story: Problem	1992	81.0(2.2)	78.9(3.1)	83.0(2.4)	84.8(2.1)	66.3(6.1)	76.1(6.6)
	1990	81.9(1.6)	77.9(2.4)	86.0(2.0)	85.1(1.8)	77.1(6.4)	57.3(6.0)
	1988	79.1(1.4)	77.4(2.3)	80.7(2.2)	80.5(1.4)	68.9(4.6)	84.2(7.5)
	1984	78.5(1.1)	75.6(1.5)	81.8(1.1)	80.6(1.2)	67.0(3.5)	77.4(2.8)
Nut story: Goal	1992	89.5(1.4)	86.2(2.5)	92.6(1.8)	91.8(1.2)	80.4(4.9)	92.7(3.8)
	1990	88.3(1.4)	84.5(2.3)	92.1(1.4)	88.3(1.6)	95.3(2.8)	80.3(5.4)
	1988	90.0(1.3)	87.0(2.0)	92.9(1.8)	90.7(1.4)	82.2(5.1)	99.3(0.9)
	1984	84.1(1.2)	81.4(1.5)	87.1(1.3)	84.8(1.4)	79.8(2.5)	84.4(3.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Nut story: Outcome	1992	81.4(1.7)	79.5(2.4)	83.2(2.3)	84.0(1.7)	69.4(5.6)	81.0(6.6)
	1990	81.8(1.7)	77.9(2.4)	85.7(2.0)	85.4(1.6)	71.9(7.2)	59.0(4.5)
	1988	84.7(1.7)	80.6(2.2)	88.7(2.1)	85.0(1.8)	83.2(4.5)	85.3(4.4)
	1984	80.5(1.0)	77.9(1.5)	83.4(1.3)	83.4(1.1)	65.2(3.2)	76.7(2.8)
History: Definition	1992	74.3(1.9)	70.6(2.8)	77.9(2.5)	80.3(1.9)	58.2(6.6)	44.7(6.1)
	1990	75.3(2.1)	75.8(3.0)	74.7(2.5)	79.5(2.0)	69.3(7.2)	61.2(7.5)
	1988	76.7(1.9)	71.3(2.7)	81.7(2.0)	79.9(2.2)	69.2(5.2)	53.8(8.0)
	1984	74.4(0.7)	70.7(1.1)	78.2(1.2)	78.8(0.7)	60.8(2.6)	54.7(3.0)
History: Survival	1992	84.4(1.5)	84.9(2.2)	83.8(2.5)	87.2(1.4)	70.7(6.0)	78.2(6.6)
	1990	82.6(1.6)	84.6(2.1)	80.6(2.3)	84.5(2.0)	77.0(3.9)	78.5(7.6)
	1988	84.2(1.7)	83.9(2.6)	84.5(1.9)	84.5(2.1)	81.5(4.1)	81.9(5.7)
	1984	82.4(0.9)	81.7(1.4)	83.2(0.9)	85.2(1.1)	72.1(2.3)	72.8(3.0)
History: Location	1992	66.5(2.1)	67.0(2.9)	66.0(2.8)	70.1(2.1)	50.3(7.3)	50.2(7.0)
	1990	63.9(1.9)	64.0(2.6)	63.7(2.8)	67.7(2.1)	57.9(6.4)	50.5(8.7)
	1988	63.9(2.1)	63.6(3.0)	64.1(2.9)	64.9(2.2)	59.4(5.1)	54.8(6.9)
	1984	62.1(0.9)	63.2(1.3)	60.9(1.2)	65.0(0.8)	50.1(3.0)	52.3(4.2)
History: Main purpose	1992	69.3(1.9)	67.1(3.2)	71.4(2.6)	74.4(2.3)	48.1(5.4)	45.9(6.8)
	1990	67.6(2.2)	68.6(2.8)	66.6(2.7)	70.7(2.2)	56.5(6.2)	64.1(5.7)
	1988	68.3(1.9)	69.3(3.5)	67.3(3.2)	70.7(2.4)	50.1(6.5)	75.1(7.0)
	1984	64.3(1.2)	62.6(1.7)	66.0(1.3)	68.5(1.3)	47.0(3.0)	51.6(3.6)
Club document: Fees	1992	78.5(1.5)	76.6(2.8)	80.3(2.0)	84.6(1.3)	58.6(5.5)	54.0(5.8)
	1990	76.3(1.6)	73.1(2.5)	79.5(2.2)	80.8(1.7)	68.4(5.8)	60.2(7.5)
	1988	73.5(1.7)	66.1(2.9)	80.4(2.2)	74.9(2.0)	61.1(5.7)	72.4(9.3)
	1984	70.4(1.0)	68.3(1.3)	72.5(1.5)	74.4(0.9)	56.0(3.3)	56.9(4.2)
Club document: Billing	1992	28.1(1.6)	26.0(2.2)	30.2(2.4)	28.2(2.0)	20.6(4.8)	37.9(5.8)
	1990	28.5(1.9)	23.1(2.6)	33.8(2.3)	31.3(2.8)	22.0(5.5)	21.8(6.6)
	1988	28.9(2.4)	27.7(3.3)	29.9(2.7)	28.6(2.8)	29.8(7.2)	30.9(***)
	1984	26.2(0.8)	24.7(1.2)	27.7(1.1)	27.5(0.8)	18.9(2.7)	25.2(3.6)
Club document: Requirements	1992	61.0(2.8)	60.1(4.1)	62.0(3.1)	63.6(3.3)	51.6(5.8)	46.9(7.0)
	1990	63.6(2.1)	58.9(3.3)	68.3(2.7)	65.0(2.3)	63.3(4.8)	48.0(7.4)
	1988	67.1(1.9)	61.7(3.1)	72.2(1.9)	66.6(2.1)	75.4(5.5)	52.6(***)
	1984	64.2(0.9)	60.9(1.5)	67.5(1.1)	66.9(1.1)	57.5(2.5)	46.5(4.8)
Fly story: Problem	1992	7.3(0.9)	5.6(1.3)	8.9(1.7)	7.5(1.1)	7.9(2.3)	2.0(1.4)
	1990	6.2(0.9)	6.8(1.4)	5.7(1.4)	5.3(1.0)	8.4(3.3)	8.5(2.2)
	1988	8.3(1.0)	8.2(2.2)	8.4(1.5)	9.8(1.3)	4.3(2.6)	0.0(0.0)
	1984	8.6(0.5)	9.1(0.9)	8.2(0.7)	7.8(0.6)	11.8(1.5)	9.7(2.5)
Fly story: Resolution	1992	49.3(1.9)	46.2(2.9)	52.3(2.3)	50.8(2.3)	46.3(7.3)	32.6(4.5)
	1990	43.2(2.1)	43.0(2.4)	43.5(2.8)	46.5(2.3)	30.8(5.9)	35.2(5.0)
	1988	45.0(2.5)	41.3(3.6)	48.4(2.8)	47.1(2.6)	34.3(6.4)	40.9(***)
	1984	43.4(0.8)	41.1(1.1)	45.8(1.3)	45.3(1.0)	36.2(3.2)	38.3(5.0)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Charley1 story: Problem	1992	60.4(1.6)	58.6(2.3)	62.0(2.4)	64.2(2.0)	45.6(5.4)	45.3(6.2)
	1990	59.0(1.7)	51.4(2.4)	66.4(2.5)	62.4(1.8)	46.8(5.8)	51.8(6.4)
	1988	57.3(2.4)	51.7(3.2)	62.6(2.6)	60.3(2.4)	42.5(9.1)	30.3(8.0)
	1984	61.5(1.2)	56.1(1.6)	66.9(1.3)	64.0(1.3)	53.2(3.5)	46.2(4.6)
Flying: 1st machine	1992	63.9(2.0)	64.0(3.1)	63.9(2.4)	69.6(2.1)	49.7(5.6)	41.3(***)
	1990	61.9(1.7)	66.0(2.2)	57.9(2.3)	66.5(1.8)	47.6(6.8)	45.3(7.0)
	1988	64.7(2.0)	67.7(2.5)	61.8(3.4)	68.4(2.4)	60.0(6.8)	34.4(***)
	1984	62.1(1.1)	65.6(1.5)	58.4(1.5)	67.3(1.3)	41.6(3.3)	46.2(3.9)
Flying: Types of planes	1992	68.1(2.1)	70.3(2.9)	66.2(3.0)	72.4(2.4)	56.7(5.8)	50.2(8.5)
	1990	65.8(1.7)	66.0(2.5)	65.6(2.3)	69.8(2.0)	57.6(6.5)	56.7(6.6)
	1988	64.4(1.6)	63.1(2.6)	65.7(2.8)	67.4(2.0)	58.5(5.2)	42.2(7.1)
	1984	66.8(1.2)	66.3(1.2)	67.5(1.9)	69.5(1.3)	57.5(3.4)	57.2(3.0)
Flying: Differences	1992	76.9(1.6)	75.5(2.4)	78.2(2.2)	81.7(1.7)	61.1(5.4)	62.2(8.5)
	1990	73.8(1.4)	75.1(2.3)	72.5(2.3)	78.2(1.8)	59.1(6.3)	60.6(6.7)
	1988	71.7(1.9)	74.6(2.0)	69.0(3.8)	74.9(2.0)	61.9(6.6)	56.5(7.5)
	1984	73.3(1.0)	73.9(1.4)	72.6(1.5)	77.6(1.1)	53.3(3.1)	65.3(2.0)
Science: Research	1992	42.8(2.3)	39.8(2.9)	45.6(3.1)	45.5(2.9)	34.3(5.4)	35.0(***)
	1990	39.4(2.2)	37.8(3.2)	41.0(2.9)	40.1(2.5)	32.7(5.9)	39.3(7.5)
	1988	41.4(1.9)	38.4(2.4)	44.3(2.5)	42.2(2.4)	33.7(4.2)	50.3(7.3)
	1984	39.6(1.1)	38.7(1.4)	40.5(1.9)	41.0(1.2)	32.4(3.1)	37.8(3.2)
Science: Evidence	1992	37.6(2.6)	34.4(3.5)	40.5(3.2)	40.4(2.9)	35.6(6.2)	13.8(7.8)
	1990	34.9(1.9)	30.0(2.6)	39.6(2.4)	38.7(2.1)	30.5(7.1)	14.0(4.8)
	1988	31.5(2.5)	29.4(2.5)	33.6(3.2)	33.2(2.9)	29.5(5.7)	11.4(4.8)
	1984	31.5(1.1)	28.4(1.7)	34.8(1.3)	34.7(1.3)	19.6(2.3)	20.6(4.5)
Phone call date	1992	70.1(1.7)	65.0(3.5)	74.7(2.0)	75.0(1.9)	52.3(5.2)	64.8(6.4)
	1990	67.9(1.9)	63.9(2.6)	71.7(2.6)	73.3(2.2)	51.0(5.6)	52.5(5.1)
	1988	66.8(2.3)	61.1(3.5)	72.2(2.6)	70.6(2.7)	54.0(5.7)	51.7(6.5)
	1984	65.0(1.4)	62.7(1.8)	67.4(1.9)	69.8(1.5)	47.6(3.5)	46.3(3.1)
Document: Phone location	1992	80.2(1.6)	79.5(2.3)	80.8(2.4)	85.4(1.6)	63.9(5.4)	63.5(***)
	1990	78.3(1.8)	74.0(2.5)	82.4(2.2)	82.7(1.9)	67.7(5.0)	64.7(7.0)
	1988	76.0(1.9)	71.7(2.9)	80.1(2.5)	77.7(2.2)	70.9(4.4)	69.9(4.4)
	1984	77.6(1.2)	77.0(1.5)	78.2(1.5)	79.6(1.3)	71.1(2.2)	69.3(4.2)
Document: Phone charge	1992	85.3(1.7)	81.0(2.9)	89.1(1.8)	87.0(1.8)	80.9(3.7)	80.7(7.1)
	1990	85.5(1.5)	78.1(2.4)	92.6(1.2)	87.2(1.5)	81.3(4.6)	82.1(5.1)
	1988	88.9(1.4)	86.7(2.2)	91.1(1.4)	89.8(1.5)	87.9(3.6)	78.7(8.3)
	1984	84.6(0.9)	81.7(1.1)	87.8(1.2)	86.5(1.0)	78.9(3.1)	77.5(3.4)
Myth: Exaggeration	1992	75.1(1.9)	77.4(2.4)	72.8(2.5)	77.9(2.2)	64.6(6.0)	67.4(6.2)
	1990	78.1(1.3)	76.6(1.8)	80.0(2.4)	82.3(1.6)	68.5(5.2)	61.2(5.2)
	1988	81.7(1.8)	81.3(2.4)	82.1(2.3)	83.2(1.9)	75.2(5.0)	74.3(6.0)
	1984	76.6(1.4)	75.6(2.0)	77.6(1.6)	80.0(1.3)	60.5(3.9)	67.3(5.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Story: Prediction about Mary	1992	58.5(2.0)	55.5(3.4)	61.8(2.5)	59.1(2.4)	57.3(7.4)	56.0(8.0)
	1990	58.4(2.1)	53.3(3.4)	64.4(2.5)	61.3(2.7)	48.5(5.9)	57.9(5.5)
	1988	63.9(2.0)	61.7(2.9)	66.2(2.6)	64.7(2.0)	63.0(5.9)	63.9(7.9)
	1984	58.5(1.2)	55.5(1.7)	61.5(1.8)	60.3(1.2)	54.7(3.0)	48.1(7.0)
Science: Cue words	1992	50.8(1.9)	46.2(3.1)	55.8(3.2)	54.7(2.2)	31.9(4.3)	49.4(7.4)
	1990	52.0(1.7)	49.8(2.5)	54.6(2.4)	52.6(2.0)	50.7(6.0)	48.4(6.7)
	1988	49.3(2.4)	46.0(2.5)	52.9(4.1)	50.9(2.8)	40.3(4.6)	55.1(7.9)
	1984	44.0(1.2)	42.0(1.6)	46.1(1.4)	46.2(1.4)	35.4(2.2)	33.6(7.1)
Biography: Honors	1992	89.5(1.6)	86.4(2.4)	92.7(1.9)	90.6(1.9)	89.9(3.2)	76.9(4.0)
	1990	84.4(1.4)	79.6(2.1)	90.1(1.8)	86.5(1.6)	79.5(5.3)	75.0(3.6)
	1988	88.1(1.6)	83.5(2.5)	93.1(1.5)	89.0(1.9)	82.2(4.9)	91.6(4.9)
	1984	85.4(1.2)	82.2(1.5)	88.5(1.5)	87.1(1.2)	74.1(3.0)	84.6(4.6)
Biography: Accomplishments	1992	91.2(1.7)	88.4(2.8)	94.1(1.8)	91.1(2.1)	91.6(3.5)	90.5(4.3)
	1990	87.7(1.4)	84.3(2.5)	91.7(1.5)	88.6(1.4)	83.8(5.1)	83.7(5.6)
	1988	90.8(1.3)	88.1(1.9)	93.7(1.2)	90.0(1.6)	91.4(4.1)	94.0(3.8)
	1984	89.5(0.7)	85.9(1.3)	93.0(0.8)	90.7(0.7)	81.4(2.5)	89.9(3.0)
Sport history: Popularity	1992	82.3(1.6)	85.7(1.6)	79.3(2.7)	83.7(1.7)	79.6(4.2)	77.2(7.9)
	1990	80.1(1.7)	79.7(2.2)	80.4(2.5)	82.1(1.7)	75.9(5.2)	74.5(5.3)
	1988	76.0(1.4)	75.6(1.7)	76.4(2.5)	80.3(1.7)	57.7(4.4)	68.6(6.1)
	1984	76.2(1.0)	73.2(1.6)	79.4(1.2)	77.9(1.3)	69.1(2.7)	71.4(3.9)
Sport history: Royalty	1992	82.1(1.8)	78.3(2.7)	85.5(2.0)	84.8(1.8)	76.1(4.9)	59.9(9.7)
	1990	77.2(1.7)	73.1(2.6)	81.1(2.3)	80.3(1.6)	70.7(6.5)	64.6(6.6)
	1988	78.7(1.7)	75.5(2.8)	81.8(2.3)	80.7(2.1)	73.8(4.8)	64.4(9.3)
	1984	78.0(1.1)	76.3(1.7)	79.9(1.1)	80.1(1.3)	69.6(2.5)	70.1(2.9)
Sport history: General	1992	67.7(2.3)	62.9(3.1)	72.0(2.3)	68.5(2.9)	62.3(5.9)	65.1(8.3)
	1990	65.1(1.8)	61.3(2.9)	68.8(2.4)	66.7(2.2)	66.1(4.5)	54.3(5.1)
	1988	66.6(2.4)	66.0(3.4)	67.2(3.6)	67.6(2.7)	63.1(5.3)	60.6(***)
	1984	62.3(1.5)	59.6(2.1)	65.3(2.1)	64.4(1.7)	55.5(3.9)	57.0(4.3)
Sport history: English	1992	54.9(1.9)	54.7(2.9)	55.2(2.9)	55.3(2.5)	53.3(4.4)	44.9(8.5)
	1990	52.8(2.0)	53.1(2.8)	52.6(3.4)	52.6(2.2)	48.5(7.4)	63.4(6.3)
	1988	52.4(1.8)	55.3(2.6)	49.6(2.8)	53.0(2.2)	45.9(5.5)	57.4(6.8)
	1984	55.1(1.3)	58.0(1.8)	52.0(1.6)	57.5(1.5)	46.7(3.0)	48.5(6.4)
Sport history: Contemporary	1992	81.6(1.4)	82.8(2.0)	80.6(2.4)	87.6(1.6)	63.9(4.7)	56.7(***)
	1990	78.3(1.8)	80.7(2.3)	76.0(2.7)	81.5(1.9)	67.8(6.4)	66.5(7.5)
	1988	79.1(1.6)	82.2(2.5)	76.0(3.1)	82.0(1.6)	69.4(6.4)	68.3(7.3)
	1984	79.0(1.1)	82.5(1.1)	75.1(1.9)	82.6(1.4)	64.8(2.6)	67.2(2.5)
Civics: Document description	1992	34.1(2.5)	31.6(3.4)	36.4(3.2)	35.0(2.9)	27.5(5.1)	31.0(***)
	1990	33.0(1.9)	29.0(2.5)	36.9(2.5)	34.5(2.0)	32.1(5.3)	24.5(6.3)
	1988	33.8(2.3)	28.2(3.0)	39.1(3.5)	35.8(2.5)	31.5(4.5)	13.8(5.3)
	1984	30.1(1.1)	27.4(1.6)	33.0(1.5)	32.9(1.3)	21.5(2.5)	19.7(4.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Civics: Importance of court	1992	58.4(2.4)	58.5(3.8)	58.3(2.7)	60.8(2.4)	54.9(5.8)	42.1(***)
	1990	59.1(1.9)	55.4(3.0)	62.8(2.2)	58.3(2.3)	60.7(5.5)	71.6(5.2)
	1988	57.5(3.0)	54.3(4.2)	60.6(4.0)	58.6(3.3)	59.4(5.5)	39.9(9.2)
	1984	57.1(1.3)	55.3(1.6)	59.0(1.7)	57.8(1.4)	53.3(3.0)	57.4(2.5)
Civics: Vocabulary	1992	6.4(1.2)	7.6(1.7)	5.3(1.6)	7.5(1.6)	5.8(2.2)	0.0(0.0)
	1990	7.3(1.0)	9.0(1.8)	5.6(1.3)	8.0(1.3)	5.3(2.0)	4.2(1.7)
	1988	6.0(1.1)	6.9(1.7)	5.2(1.3)	5.8(1.1)	5.3(2.7)	7.6(4.6)
	1984	9.5(0.6)	9.9(1.0)	9.0(0.8)	9.7(0.7)	10.6(1.6)	5.3(1.3)
U.S. history: Transportation	1992	84.6(1.6)	82.0(2.5)	86.8(1.9)	88.2(1.5)	76.3(5.9)	72.5(9.9)
	1990	85.9(1.3)	84.2(1.8)	87.6(1.8)	87.6(1.5)	79.5(4.0)	81.1(7.0)
	1988	84.1(1.7)	80.0(2.3)	88.1(2.3)	86.1(1.7)	84.8(4.2)	55.0(6.9)
	1984	84.5(0.9)	81.2(1.3)	88.2(1.0)	87.1(1.0)	74.4(2.9)	74.2(4.1)
U.S. history: Vocabulary	1992	75.0(2.1)	71.2(3.2)	78.4(2.4)	78.6(2.3)	62.6(5.0)	56.7(9.6)
	1990	73.4(2.3)	72.5(3.1)	74.3(3.0)	77.1(2.6)	64.0(5.7)	61.5(7.0)
	1988	74.4(2.1)	72.2(3.0)	76.5(3.2)	79.2(2.3)	61.1(5.8)	45.5(8.1)
	1984	74.6(1.0)	73.0(1.7)	76.3(1.5)	78.8(1.2)	60.1(2.9)	56.2(5.5)
Summer job: Apply for SS card	1992	78.2(1.7)	74.9(2.4)	81.2(2.8)	80.9(2.0)	70.9(4.0)	70.7(4.6)
	1990	76.5(1.7)	71.9(2.4)	80.9(2.2)	78.9(1.9)	69.2(5.7)	65.5(6.9)
	1988	78.5(1.5)	76.1(2.8)	80.9(2.3)	81.5(1.9)	71.7(4.7)	62.5(4.6)
	1984	74.9(1.3)	70.6(1.4)	79.0(1.6)	77.7(1.2)	61.8(3.5)	70.3(4.3)
Summer job: When to look	1992	56.7(2.0)	51.8(3.3)	61.1(2.6)	59.9(2.4)	46.8(5.8)	47.6(7.8)
	1990	56.7(1.9)	51.5(2.8)	61.6(2.4)	59.7(1.9)	52.1(5.1)	38.6(6.7)
	1988	57.1(2.1)	50.5(3.1)	63.4(3.1)	59.1(2.5)	54.9(4.6)	43.4(8.1)
	1984	57.6(1.3)	51.5(1.8)	63.5(1.6)	60.9(1.6)	39.6(2.9)	55.8(5.0)
Summer job: Documents needed	1992	61.1(2.3)	56.1(3.6)	65.4(3.1)	64.7(3.1)	42.7(5.2)	69.3(4.9)
	1990	59.6(1.9)	58.2(3.1)	60.8(2.7)	63.6(1.9)	53.4(5.0)	43.1(9.8)
	1988	54.3(1.9)	51.4(3.0)	57.2(2.3)	56.6(2.4)	50.1(3.9)	40.9(7.3)
	1984	55.7(1.5)	52.2(1.8)	59.2(1.6)	59.2(1.4)	40.3(3.0)	45.4(4.8)
Summer job: Job references	1992	51.1(2.0)	41.2(2.4)	59.8(3.2)	53.4(2.1)	41.3(4.8)	43.0(8.1)
	1990	47.7(2.0)	39.9(2.4)	55.1(2.8)	52.1(2.3)	36.4(6.0)	33.0(5.0)
	1988	50.2(2.3)	46.0(3.5)	54.3(3.0)	54.4(2.3)	32.8(5.4)	38.4(6.1)
	1984	45.2(1.1)	43.5(1.9)	46.8(1.4)	47.5(1.2)	34.1(3.8)	41.4(3.4)
Bobby story fact	1992	75.2(1.9)	65.9(2.9)	83.4(2.3)	77.3(2.0)	69.2(4.9)	68.6(6.1)
	1990	68.8(1.9)	62.8(2.5)	74.6(2.5)	71.6(1.8)	64.3(5.0)	58.5(6.6)
	1988	73.6(1.7)	70.5(3.0)	76.7(2.5)	73.8(2.0)	80.0(4.0)	58.2(7.8)
	1984	72.3(1.1)	68.0(1.4)	76.4(1.6)	75.8(1.2)	55.3(2.8)	64.2(3.5)
Central park story main idea	1992	69.7(1.9)	66.8(3.0)	72.3(2.4)	70.4(2.4)	70.4(6.2)	65.4(6.5)
	1990	65.5(1.8)	60.3(2.9)	70.5(2.6)	69.1(2.3)	55.6(5.3)	53.2(7.8)
	1988	66.1(2.2)	61.4(3.2)	70.5(2.6)	67.6(2.3)	64.4(6.4)	48.3(7.2)
	1984	66.5(1.0)	64.2(1.5)	68.7(1.4)	68.9(1.1)	54.6(3.3)	60.9(4.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Comparison of characteristics	1992	69.8(2.2)	63.9(2.8)	75.0(3.0)	72.7(2.5)	57.2(6.0)	70.8(9.4)
	1990	71.6(1.8)	69.6(2.5)	73.4(2.5)	73.9(2.0)	69.9(5.0)	56.5(8.6)
	1988	67.7(2.1)	64.2(3.6)	71.0(2.4)	71.6(2.2)	58.8(5.0)	42.9(6.4)
	1984	67.7(1.4)	64.8(1.7)	70.5(2.0)	70.0(1.3)	56.7(3.4)	63.3(6.0)
Steps in performing a trick	1992	83.1(1.7)	79.5(3.0)	86.2(2.6)	85.5(1.9)	77.0(4.5)	68.5(9.9)
	1990	87.6(1.3)	84.3(1.6)	90.7(1.8)	89.3(1.5)	85.4(4.4)	81.5(5.4)
	1988	84.5(1.3)	79.0(2.7)	89.5(1.5)	84.6(1.6)	85.8(3.5)	80.6(8.8)
	1984	82.7(1.0)	77.3(1.5)	87.7(1.5)	84.9(1.0)	70.7(4.1)	79.2(4.0)
Setting for a trick	1992	66.4(1.8)	64.5(2.7)	68.0(2.8)	70.2(2.0)	50.4(6.3)	54.6(***)
	1990	63.4(1.8)	59.2(2.7)	67.3(2.4)	67.8(2.1)	48.0(6.7)	46.2(9.5)
	1988	69.1(1.9)	63.4(2.7)	74.4(2.4)	68.8(2.3)	70.5(3.8)	63.5(9.1)
	1984	69.2(1.6)	66.0(2.1)	72.2(1.9)	71.9(1.5)	55.8(5.1)	62.3(6.1)
Result of food chain	1992	78.6(1.9)	72.2(2.6)	83.9(2.3)	81.5(1.8)	62.1(5.9)	79.8(8.2)
	1990	75.3(2.0)	70.5(2.7)	79.9(2.2)	77.7(2.0)	66.2(5.7)	65.1(7.7)
	1988	80.7(2.1)	76.9(3.2)	84.2(2.5)	81.2(2.4)	78.4(4.9)	75.6(***)
	1984	78.3(1.1)	75.7(1.0)	80.7(1.7)	81.0(1.1)	62.9(3.6)	70.3(9.0)
Food chain main idea	1992	66.2(2.3)	65.0(3.2)	67.3(3.5)	69.2(2.6)	52.3(6.2)	55.1(6.3)
	1990	66.7(2.3)	64.5(2.9)	68.9(3.0)	67.9(2.5)	57.7(5.8)	65.6(9.9)
	1988	66.0(2.0)	65.6(2.9)	66.4(2.5)	68.4(2.7)	54.2(6.7)	61.0(6.8)
	1984	62.4(1.4)	61.4(1.9)	63.3(1.5)	64.3(1.6)	53.5(4.1)	49.4(7.5)
Best title for Scott story	1992	45.5(1.9)	45.3(2.4)	45.7(3.5)	47.8(2.3)	38.8(4.2)	39.1(4.4)
	1990	42.5(2.1)	40.8(3.4)	44.1(3.1)	43.8(2.4)	37.5(6.3)	39.5(4.9)
	1988	47.2(2.1)	43.3(2.8)	51.0(3.4)	48.7(2.5)	40.4(5.2)	37.1(8.8)
	1984	41.5(1.2)	38.7(1.9)	44.4(1.4)	42.0(1.2)	39.8(3.8)	41.6(4.4)
Scott story fact	1992	71.1(1.8)	66.2(2.8)	76.6(2.4)	71.5(2.2)	74.5(4.2)	66.8(7.0)
	1990	70.6(1.7)	65.4(3.1)	75.6(2.3)	70.6(2.0)	74.4(4.9)	68.9(6.9)
	1988	70.8(2.0)	67.6(3.0)	74.0(2.9)	69.0(2.5)	73.6(3.7)	80.6(5.1)
	1984	71.1(1.3)	68.9(1.8)	73.4(1.5)	70.3(1.5)	74.6(2.5)	69.9(4.8)
Scott story definition	1992	27.7(1.8)	25.2(2.3)	30.4(2.4)	28.3(1.7)	24.0(6.2)	29.1(7.6)
	1990	32.3(1.9)	33.0(3.1)	31.7(2.5)	33.8(2.2)	26.5(4.5)	26.8(5.6)
	1988	28.5(2.0)	27.7(2.0)	29.3(3.2)	28.8(1.8)	25.8(4.9)	28.1(***)
	1984	28.2(1.2)	27.6(1.7)	28.8(1.6)	29.8(1.4)	25.3(2.5)	21.5(3.7)
Figure name	1992	87.1(1.9)	87.1(2.1)	87.2(2.5)	89.5(1.8)	79.4(6.0)	84.5(4.0)
	1990	85.7(1.5)	88.7(1.7)	82.8(2.7)	88.0(1.7)	78.9(3.7)	78.8(7.0)
	1988	86.6(1.3)	86.2(2.3)	87.0(2.1)	88.0(1.8)	81.8(2.8)	79.6(7.5)
	1984	81.6(1.1)	81.3(1.4)	81.8(1.3)	84.7(1.1)	68.9(3.2)	73.6(6.9)
Description of person	1992	97.4(0.8)	95.3(1.5)	99.6(0.3)	98.7(0.6)	97.0(2.4)	85.8(4.5)
	1990	95.9(0.9)	95.8(1.2)	95.9(1.1)	96.4(1.0)	95.8(2.0)	88.6(6.1)
	1988	96.3(0.9)	93.9(1.7)	98.7(0.6)	96.4(1.0)	98.6(1.0)	86.2(4.9)
	1984	97.2(0.4)	96.1(0.5)	98.4(0.6)	98.2(0.3)	94.3(1.6)	93.1(3.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Nonsense word 1	1992	89.4(1.3)	85.9(2.0)	93.3(1.5)	92.3(1.2)	86.5(3.3)	71.7(7.2)
	1990	88.5(1.4)	85.6(2.3)	91.4(1.4)	91.1(1.6)	78.1(3.7)	82.6(6.1)
	1988	88.6(1.5)	87.0(1.8)	90.1(2.0)	90.9(1.5)	83.0(5.9)	73.6(6.2)
	1984	87.8(0.8)	86.4(1.1)	89.3(1.2)	90.4(0.7)	79.4(2.4)	77.5(4.3)
Fact about pet care	1992	61.7(2.4)	60.6(3.7)	62.8(2.7)	67.8(2.3)	44.6(6.6)	43.7(7.8)
	1990	63.5(2.0)	58.7(2.7)	68.2(3.0)	68.0(2.2)	45.9(5.7)	61.0(***)
	1988	61.9(1.8)	52.1(2.7)	71.4(2.6)	66.9(2.0)	42.8(6.5)	48.5(7.6)
	1984	60.2(1.1)	54.8(1.3)	66.0(1.5)	67.0(1.1)	38.3(2.6)	39.2(4.8)
Fact about health of pet	1992	64.8(2.0)	62.8(3.4)	67.1(2.9)	68.5(2.0)	52.1(7.3)	53.2(5.4)
	1990	62.2(1.7)	58.3(2.6)	66.0(2.4)	64.9(1.9)	56.9(5.0)	47.7(***)
	1988	61.3(2.2)	58.9(3.6)	63.7(2.7)	66.9(2.3)	37.5(8.1)	54.2(***)
	1984	64.9(1.1)	63.3(1.6)	66.6(1.7)	71.4(1.2)	41.9(2.3)	43.4(5.0)
Sport: Main reason	1992	60.5(2.3)	60.4(2.8)	60.5(3.0)	64.0(2.6)	49.9(5.1)	46.9(5.0)
	1990	59.1(1.8)	57.2(2.6)	61.0(2.6)	63.1(2.1)	45.9(5.4)	36.5(7.7)
	1988	64.0(1.9)	58.6(2.5)	69.4(2.3)	66.2(2.1)	49.1(3.2)	68.3(8.6)
	1984	56.1(1.4)	53.0(1.8)	59.3(1.8)	61.9(1.4)	33.3(2.9)	40.9(4.9)
Trip length in James biography	1992	96.8(0.8)	95.5(1.0)	98.1(1.1)	97.8(0.5)	93.0(2.9)	98.9(1.0)
	1990	96.4(0.7)	94.9(1.4)	97.8(0.7)	96.7(0.8)	96.2(2.2)	94.9(3.7)
	1988	96.7(0.9)	95.6(1.3)	97.8(1.1)	97.2(1.0)	93.0(3.3)	96.8(2.9)
	1984	98.5(0.2)	98.0(0.4)	99.0(0.4)	98.8(0.2)	97.1(1.0)	98.1(1.2)
Importance of James's trip	1992	63.4(2.3)	60.5(3.2)	66.2(2.5)	68.3(2.7)	49.1(6.5)	37.4(5.1)
	1990	62.8(1.8)	62.2(2.3)	63.4(2.7)	67.7(1.9)	54.3(7.1)	44.8(6.6)
	1988	63.7(1.4)	64.4(2.3)	63.0(2.6)	66.5(1.9)	51.6(4.9)	43.0(7.7)
	1984	67.1(1.5)	68.1(2.1)	66.0(2.0)	71.3(1.4)	50.3(4.8)	52.7(5.4)
Hardships endured by James	1992	91.6(1.5)	89.1(2.4)	94.0(1.6)	93.7(1.5)	80.0(6.7)	88.5(5.2)
	1990	92.7(1.0)	91.1(1.5)	94.4(1.4)	93.4(1.2)	92.1(2.9)	90.0(4.1)
	1988	93.4(1.0)	90.5(1.7)	96.1(1.0)	93.7(1.2)	92.9(2.4)	87.2(5.5)
	1984	95.5(0.6)	94.1(0.8)	97.0(0.7)	96.3(0.5)	92.6(1.8)	91.3(4.1)
Phone document for New York	1992	55.9(2.2)	52.9(3.1)	58.8(3.4)	60.9(3.0)	36.6(5.1)	33.3(5.7)
	1990	53.4(2.0)	54.4(2.9)	52.3(2.7)	57.5(2.0)	41.4(5.9)	35.5(6.1)
	1988	51.0(2.5)	49.4(3.2)	52.5(3.0)	53.1(2.6)	47.7(8.7)	37.0(***)
	1984	52.6(1.3)	52.7(2.0)	52.5(1.7)	55.0(1.4)	41.3(3.5)	49.9(4.5)
Phone document for Syracuse	1992	75.1(1.8)	72.2(2.7)	78.0(2.8)	77.1(2.3)	67.1(6.2)	62.9(6.9)
	1990	76.5(1.8)	72.2(2.7)	80.8(2.3)	80.3(1.8)	65.3(5.6)	65.6(5.5)
	1988	74.9(1.5)	67.2(2.8)	82.1(1.9)	76.2(1.9)	73.5(4.7)	53.5(***)
	1984	74.2(1.0)	73.3(1.8)	75.2(1.2)	77.1(1.2)	63.0(2.7)	66.5(3.2)
Tiresome jobs – 1900's	1992	53.9(2.1)	50.3(3.3)	57.4(2.3)	57.0(2.4)	33.8(5.2)	54.2(7.2)
	1990	53.4(1.9)	48.6(2.8)	58.2(2.3)	59.0(1.9)	40.7(6.1)	39.6(5.4)
	1988	57.1(2.0)	52.4(3.0)	61.5(3.1)	59.5(2.2)	42.8(6.0)	51.2(***)
	1984	58.0(1.6)	55.5(1.8)	60.5(2.4)	60.6(1.6)	44.8(4.1)	49.9(8.1)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Jobs in the woods - 1900's	1992	62.3(2.1)	58.5(3.4)	66.0(2.1)	66.1(2.6)	50.9(5.7)	36.9(6.2)
	1990	61.1(2.2)	56.1(2.6)	65.9(3.4)	66.2(2.5)	48.8(4.8)	48.5(6.9)
	1988	64.4(2.2)	59.3(2.8)	69.1(2.7)	69.0(2.2)	41.1(4.4)	51.8(***)
	1984	68.7(1.4)	64.0(2.1)	73.6(2.0)	72.4(1.5)	51.3(2.8)	63.8(6.9)
Home jobs - 1900's	1992	77.2(2.1)	67.7(3.5)	86.5(2.3)	81.0(1.8)	62.5(5.1)	59.4(9.9)
	1990	75.1(1.5)	67.3(3.0)	82.8(2.2)	79.2(1.7)	73.2(4.0)	54.4(6.4)
	1988	78.5(1.6)	70.6(2.4)	86.0(2.2)	79.9(1.7)	73.9(5.0)	61.4(8.2)
	1984	81.8(1.1)	77.2([illegible])	86.7(1.2)	84.5(1.2)	68.2(3.9)	77.3(4.5)
Advertisement for carrier	1992	81.8(1.5)	75.4(2.4)	88.5(2.0)	87.3(1.3)	62.9(5.3)	71.4(5.0)
	1990	82.9(1.4)	79.0(2.3)	87.5(1.7)	86.0(1.5)	72.8(4.8)	77.5(4.1)
	1988	83.0(2.1)	80.0(3.1)	86.2(2.3)	84.6(2.0)	75.9(5.6)	81.8(6.2)
	1984	78.6(1.2)	76.4(1.8)	80.8(1.6)	82.2(1.1)	60.5(3.3)	69.5(6.7)
Carrier job requirements	1992	84.6(1.5)	83.5(2.0)	85.9(2.0)	86.8(1.6)	80.8(4.4)	71.9(5.3)
	1990	80.2(1.7)	78.9(2.7)	81.8(2.4)	84.5(1.9)	65.9(5.4)	69.4(5.6)
	1988	83.4(1.7)	83.3(2.2)	83.5(2.3)	86.9(1.6)	69.6(6.4)	72.4(7.4)
	1984	82.2(1.0)	80.6(1.7)	83.8(1.4)	84.6(1.1)	72.4(2.7)	71.8(3.3)
Carrier job responsibilities	1992	85.8(1.8)	83.3(2.5)	88.5(2.5)	87.7(1.7)	82.0(4.7)	80.8(6.1)
	1990	79.5(1.4)	75.0(2.2)	84.9(2.1)	82.2(1.5)	71.0(5.2)	70.7(4.7)
	1988	83.0(1.8)	79.5(2.3)	86.8(2.2)	84.8(1.9)	76.5(5.5)	79.5(***)
	1984	78.5(0.9)	76.0(1.2)	81.0(1.1)	81.2(0.9)	66.5(2.9)	68.9(4.4)
Silky story fact	1992	87.9(1.5)	84.1(2.5)	91.9(1.8)	89.9(1.5)	79.6(5.5)	89.2(4.5)
	1990	86.9(1.3)	82.1(2.0)	92.6(1.6)	89.2(1.1)	77.1(6.3)	84.3(3.6)
	1988	91.4(1.3)	88.7(1.8)	94.3(1.4)	92.2(1.4)	84.7(4.0)	91.6(3.8)
	1984	89.8(0.9)	86.1(1.4)	93.5(0.9)	91.3(1.0)	84.0(1.9)	83.4(3.9)
History of gold rush fact	1992	68.4(1.8)	62.8(2.5)	74.3(2.3)	71.5(1.8)	58.2(5.6)	56.2(5.8)
	1990	58.6(2.2)	51.7(3.0)	66.7(2.8)	61.4(2.8)	53.0(5.7)	47.5(6.6)
	1988	63.4(2.0)	57.4(3.1)	69.7(2.5)	68.1(2.2)	55.5(4.7)	40.0(***)
	1984	50.6(1.4)	47.2(1.7)	54.1(1.6)	53.5(1.6)	36.9(2.7)	42.8(7.1)
Winnie drawing	1992	93.3(1.2)	93.4(1.7)	93.2(1.4)	93.8(1.5)	90.0(3.9)	95.3(2.8)
	1990	94.1(0.8)	93.3(1.4)	95.0(1.0)	94.6(1.0)	92.7(2.6)	89.9(3.1)
	1988	95.7(0.9)	95.1(1.0)	96.3(1.2)	94.5(1.2)	98.3(1.7)	100.0(0.0)
	1984	93.3(0.5)	92.0(0.6)	94.7(0.8)	94.4(0.5)	87.7(2.1)	91.7(2.4)
History of arts before 1940	1992	22.8(1.9)	24.2(2.7)	21.3(2.2)	23.7(2.2)	23.1(4.5)	18.1(5.0)
	1990	23.6(1.9)	26.0(2.9)	20.7(2.3)	24.2(2.3)	22.4(4.4)	19.5(6.1)
	1988	23.8(1.6)	24.4(2.6)	23.2(2.2)	25.2(2.0)	25.6(3.2)	12.5(5.6)
	1984	22.1(1.0)	22.6(1.8)	21.7(1.3)	23.4(1.2)	16.3(1.9)	15.5(2.6)
Historical privilege of arts	1992	42.0(2.1)	43.0(2.9)	41.0(3.1)	42.8(2.3)	41.8(7.6)	28.1(5.6)
	1990	34.4(1.4)	33.8(2.7)	35.1(2.4)	35.7(1.8)	26.1(3.9)	34.7(5.5)
	1988	36.7(2.3)	36.1(2.7)	37.4(3.6)	39.1(3.0)	32.9(5.4)	18.5(5.8)
	1984	35.2(1.1)	35.7(1.7)	34.8(1.6)	37.9(1.3)	24.5(2.9)	24.3(3.8)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Mass production of art	1992	20.3(1.4)	17.3(1.6)	23.4(2.1)	21.5(1.6)	13.6(3.1)	23.8(6.3)
	1990	19.8(1.5)	19.8(2.3)	19.8(2.0)	19.9(1.6)	18.3(4.3)	22.7(5.2)
	1988	22.2(2.1)	20.9(2.8)	23.5(2.5)	22.5(2.7)	17.7(3.1)	22.4(4.8)
	1984	21.5(1.1)	19.0(1.7)	23.9(1.3)	21.5(1.3)	23.8(2.5)	16.7(2.9)
Traffic violation fact	1992	67.5(1.7)	70.6(2.7)	64.2(2.5)	67.2(2.1)	67.6(5.5)	66.0(6.6)
	1990	64.7(1.8)	65.5(2.5)	63.6(2.6)	66.0(2.0)	61.5(5.5)	65.8(5.5)
	1988	67.1(2.4)	67.6(2.8)	66.6(3.9)	67.9(2.8)	60.8(4.0)	73.0(7.5)
	1984	62.8(1.3)	60.0(2.1)	65.4(1.8)	64.8(1.3)	52.2(4.0)	55.5(6.1)
Cost of traffic fine	1992	54.5(1.8)	54.9(2.7)	54.2(2.7)	60.0(2.1)	36.2(6.6)	38.5(6.5)
	1990	50.3(2.0)	51.1(2.6)	49.5(2.9)	53.7(2.2)	45.1(5.3)	34.3(5.5)
	1988	46.8(2.2)	47.2(3.0)	46.4(2.5)	51.2(2.4)	29.0(5.3)	43.7(***)
	1984	49.7(1.1)	51.4(1.6)	48.0(1.5)	53.3(1.3)	37.5(3.1)	30.6(3.3)
Traffic fine payment	1992	33.2(2.2)	30.5(2.9)	36.0(2.9)	33.7(2.5)	37.1(5.0)	21.4(5.5)
	1990	32.6(1.7)	31.7(2.4)	33.5(2.9)	34.5(2.0)	24.7(5.4)	30.5(5.1)
	1988	32.8(2.0)	31.4(3.3)	34.3(2.4)	35.7(2.2)	14.8(5.6)	21.9(6.1)
	1984	31.8(1.2)	33.0(1.4)	30.6(1.7)	33.2(1.1)	22.8(2.6)	35.1(3.2)
Seal food information	1992	63.4(2.9)	63.2(4.0)	63.7(3.1)	66.7(3.1)	53.6(7.5)	51.5(6.9)
	1990	59.3(2.1)	56.3(3.0)	62.8(3.2)	63.8(2.2)	41.3(7.1)	47.8(8.2)
	1988	67.2(2.1)	69.4(2.5)	65.1(3.2)	69.6(2.5)	55.7(6.2)	65.8(8.7)
	1984	64.0(1.4)	64.8(1.9)	63.3(1.7)	67.8(1.5)	45.7(2.5)	44.0(5.2)
Fact about seals in Mexico	1992	47.8(2.5)	42.9(3.7)	53.0(3.0)	51.4(2.9)	32.9(4.1)	40.4(4.9)
	1990	40.8(1.9)	36.7(2.5)	45.7(2.5)	44.6(2.1)	26.8(5.9)	25.8(5.8)
	1988	46.1(2.1)	40.8(3.4)	51.4(3.0)	51.9(2.6)	26.7(5.3)	19.6(9.7)
	1984	45.3(1.3)	40.6(2.0)	49.8(1.5)	48.3(1.6)	29.0(3.3)	29.5(3.8)
Describe seals	1992	45.5(2.3)	43.6(3.3)	47.6(3.2)	47.3(2.7)	36.6(5.8)	43.0(4.6)
	1990	46.4(2.1)	44.1(3.0)	49.1(3.0)	50.3(2.7)	32.1(5.9)	36.5(5.4)
	1988	43.6(2.0)	41.4(3.0)	45.7(2.8)	47.3(2.5)	31.2(4.4)	28.7(8.5)
	1984	45.1(1.5)	41.8(1.9)	48.2(2.1)	46.1(1.6)	39.5(3.6)	40.1(6.9)
Birth cycle of seals	1992	59.4(2.9)	55.8(4.5)	63.4(3.1)	65.5(3.5)	32.5(5.7)	41.1(7.7)
	1990	52.2(1.8)	46.0(2.3)	59.4(3.1)	54.6(2.3)	42.6(4.8)	37.5(7.3)
	1988	62.6(1.7)	58.0(2.9)	67.1(2.8)	67.5(2.2)	42.0(4.9)	49.3(***)
	1984	60.9(1.4)	57.8(2.1)	63.9(1.4)	64.7(1.7)	38.9(3.5)	43.1(5.8)
Seals: Definition	1992	77.6(2.0)	74.3(2.8)	81.1(2.7)	80.6(2.1)	64.9(7.2)	67.9(5.9)
	1990	77.6(2.0)	71.9(2.8)	84.4(2.0)	80.2(1.9)	72.6(6.1)	58.0(7.5)
	1988	80.0(2.0)	77.8(3.0)	82.2(2.9)	82.9(2.0)	68.7(7.5)	65.2(***)
	1984	79.9(1.2)	77.9(1.4)	81.8(1.7)	83.0(1.2)	63.5(3.2)	63.3(5.0)
Hero story: Main idea	1992	79.6(2.5)	79.6(3.3)	79.5(3.1)	81.5(2.9)	72.1(5.1)	74.5(7.1)
	1990	76.5(1.7)	74.3(2.4)	78.7(2.5)	78.6(2.1)	70.2(6.5)	69.7(9.7)
	1988	79.3(1.8)	78.4(2.5)	80.2(2.3)	80.9(2.4)	71.1(4.5)	75.2(6.2)
	1984	75.0(0.8)	74.7(1.1)	75.3(1.3)	76.6(0.8)	67.7(2.9)	69.2(3.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 13

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Country of hero in story	1992	92.8(0.9)	89.3(1.9)	96.0(1.1)	92.4(1.2)	91.5(2.7)	98.8(1.3)
	1990	90.1(1.2)	86.3(1.5)	93.9(1.3)	90.2(1.4)	92.8(4.0)	89.8(4.3)
	1988	88.3(1.4)	84.4(2.0)	92.1(1.9)	88.2(1.7)	87.3(3.7)	92.2(6.5)
	1984	89.6(0.6)	86.5(0.7)	92.9(0.8)	90.7(0.6)	85.4(2.1)	85.0(3.1)
Hero story: Fact	1992	60.3(2.0)	58.0(3.2)	62.4(2.7)	64.2(2.3)	44.6(4.7)	51.9(7.3)
	1990	59.3(1.8)	58.7(2.7)	60.0(2.6)	61.6(2.4)	47.1(5.4)	60.6(5.9)
	1988	58.4(1.9)	59.9(2.1)	56.9(3.2)	61.1(2.3)	47.2(5.3)	43.4(8.7)
	1984	59.0(1.2)	59.6(1.6)	58.3(1.5)	62.4(1.4)	44.7(2.5)	48.5(4.8)
Money in hero story	1992	73.3(2.1)	67.3(2.6)	79.0(2.8)	75.1(2.6)	65.3(5.4)	81.3(5.9)
	1990	70.2(1.5)	64.4(2.6)	76.0(2.6)	72.2(1.9)	61.5(5.2)	67.7(4.4)
	1988	69.1(2.1)	64.0(2.9)	74.1(3.1)	70.1(2.1)	64.1(5.4)	65.3(9.0)
	1984	73.3(1.0)	69.0(1.5)	77.9(1.3)	74.9(1.1)	66.9(2.1)	69.7(3.5)
Hero story: Goal	1992	77.2(2.0)	73.9(3.3)	80.2(2.4)	79.6(2.5)	68.6(4.3)	71.3(6.4)
	1990	78.6(1.5)	74.3(2.0)	82.9(2.2)	80.6(1.9)	75.0(4.8)	67.6(4.9)
	1988	77.4(1.7)	74.4(2.5)	80.3(1.6)	78.3(2.1)	71.4(5.0)	77.2(8.0)
	1984	75.2(0.8)	73.2(1.6)	77.4(1.2)	77.0(0.9)	64.6(2.8)	73.6(2.8)
Purpose of business article	1992	59.9(1.7)	54.7(3.0)	64.8(2.7)	62.4(1.9)	52.4(5.1)	54.9(8.2)
	1990	58.6(1.6)	55.9(2.2)	61.2(2.3)	60.0(1.9)	52.9(6.3)	53.4(6.5)
	1988	59.4(2.1)	55.7(2.5)	62.9(3.3)	62.5(2.5)	45.7(5.5)	51.1(9.4)
	1984	55.5(1.1)	52.5(1.4)	58.6(1.1)	58.3(1.1)	46.8(3.3)	43.5(3.5)
Identify business liability	1992	36.5(2.0)	37.5(3.1)	35.5(2.3)	39.4(2.3)	23.5(4.4)	37.5(8.0)
	1990	35.2(1.8)	31.7(2.4)	38.7(2.5)	37.6(2.0)	29.6(6.1)	23.8(6.5)
	1988	38.5(1.9)	41.8(2.7)	35.4(2.8)	40.7(2.0)	32.2(5.4)	24.2(***)
	1984	35.7(0.9)	36.0(1.1)	35.3(1.5)	38.1(1.0)	25.8(2.7)	29.2(2.4)
Define business profit	1992	84.8(1.6)	87.1(2.4)	82.7(2.5)	88.0(1.4)	74.6(5.7)	79.6(6.4)
	1990	83.6(1.6)	83.6(2.6)	83.5(1.8)	87.4(1.5)	77.3(6.1)	60.0(5.7)
	1988	84.6(1.8)	85.6(2.5)	83.7(2.6)	87.4(2.0)	77.5(4.2)	63.1(***)
	1984	85.7(0.6)	85.9(0.9)	85.5(0.9)	88.1(0.7)	76.7(2.3)	75.0(2.4)
One purpose of trees	1992	80.5(1.7)	78.8(2.7)	82.1(2.0)	83.6(1.8)	70.0(5.8)	70.0(5.4)
	1990	79.1(1.6)	76.1(1.8)	82.0(2.0)	82.6(1.7)	67.5(6.1)	64.7(9.5)
	1988	80.7(1.9)	80.5(2.4)	80.9(2.7)	82.9(2.1)	67.8(5.8)	79.5(8.3)
	1984	81.9(0.8)	81.3(1.3)	82.4(0.9)	84.4(0.9)	70.9(2.5)	75.4(2.0)
Second purpose of trees	1992	46.8(1.9)	48.9(2.5)	44.8(2.9)	54.4(2.7)	26.2(4.4)	22.3(7.0)
	1990	46.3(2.2)	46.9(2.7)	45.7(3.4)	51.7(2.6)	30.2(5.7)	21.8(5.7)
	1988	53.6(2.6)	53.9(3.6)	53.3(2.8)	57.3(2.9)	35.4(5.0)	41.2(8.9)
	1984	52.1(1.2)	51.9(1.6)	52.2(1.3)	56.3(1.4)	36.6(2.5)	34.9(3.8)
Purpose of green belt	1992	75.5(2.2)	73.8(2.8)	77.0(2.9)	79.4(2.1)	61.9(6.2)	70.4(6.9)
	1990	73.9(1.6)	75.4(2.6)	72.4(2.0)	76.2(1.9)	68.4(5.1)	61.2(8.2)
	1988	78.3(1.8)	77.1(2.7)	79.4(2.8)	81.0(1.7)	60.7(8.6)	76.4(8.1)
	1984	72.7(1.0)	70.9(1.2)	74.6(1.5)	76.5(1.0)	56.6(2.8)	59.8(3.4)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Computer chip: Central purpose	1992	71.8(1.7)	67.2(2.6)	75.9(1.8)	75.2(2.1)	53.9(4.9)	64.7(6.2)
	1990	71.0(2.2)	69.4(3.2)	72.7(2.5)	74.5(2.2)	55.7(4.7)	71.1(8.1)
	1988	72.5(1.6)	74.0(2.5)	71.1(2.6)	76.5(1.7)	57.7(4.7)	65.2(6.2)
	1984	68.3(1.5)	67.2(1.3)	69.4(2.1)	72.5(1.3)	51.5(4.2)	53.3(4.7)
Computer chip: Supporting idea	1992	48.3(2.3)	46.9(3.0)	49.5(2.7)	50.8(2.8)	29.7(5.0)	52.9(7.7)
	1990	52.1(2.0)	52.7(3.4)	51.6(2.2)	54.8(2.6)	40.1(4.5)	51.2(***)
	1988	50.4(2.3)	47.6(3.4)	53.0(3.2)	52.3(2.6)	49.3(5.6)	32.5(6.2)
	1984	47.5(0.8)	44.2(1.5)	51.0(1.5)	51.5(1.0)	30.3(2.4)	33.1(4.6)
Computer chip: Vocabulary	1992	26.1(1.7)	25.7(2.3)	26.4(2.3)	26.5(2.1)	26.9(5.8)	26.1(6.9)
	1990	29.1(1.8)	29.9(2.6)	28.2(2.6)	29.6(2.2)	22.2(5.1)	40.6(7.5)
	1988	26.1(2.3)	27.6(2.7)	24.9(2.9)	25.7(2.3)	27.7(6.0)	24.7(6.3)
	1984	28.2(1.0)	29.1(1.4)	27.3(1.6)	29.4(1.1)	21.9(2.5)	27.6(3.2)
Coupon document: Limitations	1992	77.7(2.2)	76.2(2.6)	79.1(2.6)	80.3(1.9)	66.7(5.9)	77.6(6.7)
	1990	77.5(2.2)	71.4(3.2)	83.8(2.4)	80.4(2.5)	65.2(6.0)	74.2(***)
	1988	81.2(1.3)	76.3(2.5)	85.2(1.8)	83.3(1.8)	71.5(5.1)	78.1(7.7)
	1984	73.7(1.1)	69.3(1.8)	78.2(1.2)	77.8(1.2)	60.5(3.0)	52.8(4.1)
Coupon document: Expiration	1992	96.2(0.8)	97.2(0.8)	95.3(1.1)	96.2(0.8)	97.5(1.8)	91.6(4.0)
	1990	96.6(0.8)	94.6(1.4)	98.7(0.6)	96.3(0.9)	98.1(0.9)	95.3(3.1)
	1988	97.5(0.6)	96.5(1.2)	98.3(0.6)	97.5(0.8)	96.0(1.5)	100.0(0.0)
	1984	95.3(0.5)	94.0(0.7)	96.6(0.8)	96.4(0.4)	91.8(1.2)	90.5(3.5)
Coupon: Value	1992	69.5(1.9)	65.8(2.8)	72.8(2.6)	74.1(2.3)	37.7(5.8)	76.9(7.0)
	1990	70.8(2.0)	69.9(2.4)	71.7(3.1)	74.9(2.0)	54.4(5.7)	66.5(***)
	1988	71.3(2.3)	73.0(3.9)	69.7(2.8)	72.8(2.6)	68.7(4.4)	67.3(8.3)
	1984	74.1(1.3)	72.2(1.6)	76.0(1.8)	79.3(1.2)	52.9(3.4)	55.1(5.7)
Carad poem	1992	77.2(2.1)	73.0(3.2)	81.0(2.4)	81.1(2.1)	54.9(5.5)	73.3(7.2)
	1990	78.7(1.8)	75.8(2.5)	81.8(2.2)	81.1(1.8)	69.7(5.2)	76.8(9.7)
	1988	78.5(1.7)	78.4(2.8)	78.4(2.6)	82.1(2.1)	69.0(4.7)	51.3(7.9)
	1984	77.6(0.9)	75.8(1.4)	79.6(1.1)	82.2(0.9)	58.9(3.3)	65.5(5.4)
Nut story: Plan	1992	95.7(0.9)	93.4(1.4)	97.8(1.0)	96.2(1.0)	94.5(2.7)	90.3(5.6)
	1990	96.5(0.7)	94.2(1.3)	98.8(0.6)	96.1(0.9)	97.4(1.6)	97.3(2.7)
	1988	97.4(0.8)	94.9(1.6)	99.5(0.4)	96.9(1.0)	98.4(1.7)	100.0(0.0)
	1984	96.4(0.5)	94.6(0.7)	98.3(0.6)	97.1(0.4)	95.5(1.0)	91.3(4.0)
Nut story: Problem	1992	87.8(1.6)	84.5(2.9)	90.7(1.7)	89.5(1.9)	80.2(4.4)	80.7(5.2)
	1990	87.8(1.2)	81.2(2.2)	94.6(1.4)	87.3(1.3)	85.6(3.4)	95.3(3.0)
	1988	91.6(1.2)	87.8(2.5)	94.7(1.2)	91.8(1.5)	92.7(2.4)	87.3(7.7)
	1984	88.8(0.8)	85.9(0.9)	91.8(1.3)	90.8(0.8)	79.5(3.2)	83.7(3.9)
Nut story: Goal	1992	91.7(1.0)	89.1(1.6)	94.1(1.5)	92.9(1.2)	85.4(3.5)	88.4(6.3)
	1990	90.7(1.3)	86.5(2.2)	95.0(1.2)	91.0(1.4)	89.0(3.1)	92.9(4.6)
	1988	93.9(1.2)	92.5(1.7)	95.1(1.7)	94.9(1.4)	91.2(2.7)	92.2(3.4)
	1984	91.9(0.7)	89.5(1.0)	94.5(0.8)	93.6(0.6)	85.4(2.1)	86.5(3.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Nut story: Outcome	1992	87.3(1.6)	83.6(2.8)	90.6(1.7)	88.3(1.8)	82.3(4.7)	85.1(5.0)
	1990	89.1(1.5)	82.7(2.5)	95.5(1.5)	88.5(1.7)	90.1(2.6)	92.9(4.6)
	1988	91.1(1.3)	88.1(1.7)	93.7(1.8)	91.8(1.6)	89.5(3.5)	94.2(4.3)
	1984	90.0(0.7)	87.2(1.1)	92.9(0.9)	92.1(0.8)	83.1(2.0)	80.1(5.1)
Club document: Fees	1992	85.9(1.3)	84.1(2.0)	88.0(1.8)	90.5(1.3)	67.8(5.6)	82.9(5.6)
	1990	80.8(1.5)	75.9(2.4)	85.8(1.9)	84.7(1.4)	67.5(6.1)	75.0(***)
	1988	86.5(1.4)	87.4(2.2)	85.7(1.6)	87.7(1.5)	83.3(4.1)	80.8(6.2)
	1984	83.6(0.6)	82.6(0.9)	84.7(0.9)	86.6(0.7)	72.0(1.9)	76.5(3.9)
Club document: Billing	1992	32.3(1.9)	29.1(2.5)	35.8(2.8)	31.1(2.2)	34.2(5.5)	37.3(7.2)
	1990	36.5(2.1)	33.2(2.7)	39.8(3.2)	37.6(2.4)	29.5(4.8)	34.1(9.0)
	1988	31.4(2.3)	31.3(2.9)	31.6(3.8)	32.1(2.4)	24.1(3.5)	37.6(7.7)
	1984	39.2(0.8)	37.4(1.2)	41.0(1.3)	39.7(0.9)	37.3(2.3)	37.9(1.9)
Club document: Requirements	1992	79.0(1.9)	78.7(2.6)	79.4(2.1)	82.2(2.1)	72.5(5.2)	61.2(7.2)
	1990	77.6(1.8)	76.0(2.5)	79.3(2.7)	80.0(1.5)	68.9(6.8)	79.5(9.5)
	1988	79.8(2.1)	81.1(3.8)	79.0(2.0)	82.8(2.3)	73.0(4.9)	61.3(6.0)
	1984	79.7(0.8)	77.2(1.0)	82.3(1.0)	83.8(0.8)	65.5(2.2)	64.9(2.9)
Charley1 story: Problem	1992	85.3(1.5)	83.7(2.1)	87.1(1.9)	87.3(1.6)	75.0(5.3)	86.8(4.6)
	1990	85.2(1.5)	80.1(2.5)	90.4(1.6)	86.7(1.6)	78.7(4.2)	86.4(7.4)
	1988	85.9(1.8)	80.5(3.4)	90.6(1.6)	86.9(2.1)	79.0(5.0)	83.8(6.1)
	1984	83.7(0.7)	78.5(1.1)	89.1(0.8)	86.1(0.7)	72.0(2.2)	79.6(3.2)
Flying: 1st machine	1992	77.1(1.5)	80.0(2.1)	74.3(2.2)	82.4(1.7)	54.7(5.8)	72.0(9.1)
	1990	78.1(2.0)	82.1(2.9)	73.9(2.7)	81.6(1.7)	62.2(6.3)	76.5(7.6)
	1988	77.5(1.8)	81.0(2.6)	74.0(2.1)	80.8(1.8)	63.9(4.3)	68.5(7.5)
	1984	77.7(1.0)	80.8(1.3)	74.1(1.5)	81.3(1.0)	63.8(3.4)	67.3(4.3)
Flying: Types of planes	1992	81.5(1.6)	81.4(2.1)	81.7(2.4)	86.0(1.7)	70.8(5.3)	55.0(***)
	1990	81.7(1.8)	79.4(2.3)	84.2(2.3)	84.7(1.6)	72.0(5.5)	74.8(***)
	1988	80.8(1.3)	79.2(2.5)	82.5(2.3)	81.9(1.6)	75.5(4.3)	75.8(***)
	1984	81.1(1.2)	78.9(1.6)	83.6(1.2)	83.3(1.3)	72.2(3.3)	75.0(5.5)
Flying: Differences	1992	86.9(1.3)	86.1(1.7)	87.7(1.9)	88.4(1.3)	78.5(5.2)	86.0(7.2)
	1990	86.5(1.5)	84.6(2.5)	88.4(2.0)	89.7(1.4)	74.1(6.6)	86.4(4.9)
	1988	86.1(1.4)	84.5(2.2)	87.7(1.8)	86.5(1.5)	80.8(5.0)	92.2(4.7)
	1984	85.8(1.0)	84.8(1.4)	87.0(1.3)	88.4(1.1)	74.9(2.7)	78.7(3.7)
Science: Research	1992	58.5(2.0)	55.6(3.4)	61.3(2.3)	59.2(2.3)	54.3(4.4)	49.7(7.6)
	1990	58.0(2.1)	57.0(2.9)	59.0(3.5)	61.5(2.3)	42.2(6.1)	57.7(7.0)
	1988	54.0(2.2)	47.1(3.3)	61.0(2.8)	54.7(2.4)	46.9(4.8)	57.4(8.6)
	1984	54.2(1.1)	52.9(1.8)	55.7(1.3)	56.5(1.3)	42.1(2.6)	51.5(7.3)
Science: Evidence	1992	61.8(1.7)	57.7(2.6)	66.0(2.8)	65.4(2.1)	48.1(4.9)	54.6(***)
	1990	57.9(1.9)	52.3(2.7)	63.9(2.5)	59.8(2.1)	54.6(5.9)	44.7(9.8)
	1988	55.9(2.4)	54.3(3.6)	57.5(2.5)	55.5(2.6)	50.3(4.9)	70.3(5.6)
	1984	55.7(1.4)	51.8(1.7)	60.0(1.8)	59.7(1.6)	38.4(3.8)	46.6(3.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Phone call date	1992	89.5(1.2)	86.2(2.0)	92.8(1.8)	91.4(1.4)	78.9(4.2)	90.5(4.0)
	1990	87.3(1.5)	86.8(2.5)	87.8(1.9)	91.5(1.3)	71.3(5.3)	84.4(7.3)
	1988	85.0(2.1)	86.3(2.3)	83.8(3.1)	85.8(2.6)	79.1(4.0)	88.5(4.4)
	1984	86.2(1.2)	83.1(1.5)	89.6(1.2)	89.4(1.1)	73.8(3.2)	74.0(4.0)
Document: Phone location	1992	91.6(1.1)	87.8(2.0)	95.4(1.3)	93.4(1.4)	86.1(4.0)	87.3(4.9)
	1990	90.1(1.3)	88.5(2.2)	91.8(1.2)	92.7(1.2)	81.0(4.9)	87.7(9.0)
	1988	89.2(1.5)	89.7(1.9)	88.8(2.6)	89.6(1.9)	88.4(3.7)	87.1(4.5)
	1984	89.8(0.9)	87.8(1.2)	92.0(1.0)	91.8(0.8)	81.7(3.2)	82.4(3.1)
Document: Phone charge	1992	94.4(0.9)	95.5(1.2)	93.2(1.4)	95.7(0.9)	92.7(2.1)	81.4(9.7)
	1990	92.2(1.2)	93.3(1.6)	91.0(1.7)	93.3(1.0)	84.8(4.7)	94.2(3.6)
	1988	94.3(1.3)	94.4(1.5)	94.3(2.1)	93.7(1.6)	95.3(1.9)	97.6(1.4)
	1984	91.6(1.1)	90.4(1.2)	92.9(1.4)	92.3(1.2)	88.3(1.9)	89.8(2.4)
Story: Prediction about Mary	1992	72.8(1.8)	69.8(2.4)	76.1(2.3)	76.5(2.1)	63.0(5.8)	66.2(8.7)
	1990	75.0(1.8)	73.0(2.6)	76.9(2.4)	78.0(2.1)	65.9(4.9)	59.3(9.3)
	1988	74.9(2.0)	71.3(2.8)	78.0(2.6)	79.0(2.5)	69.0(5.1)	49.7(8.3)
	1984	69.7(1.0)	65.3(1.3)	74.6(1.2)	72.7(1.2)	61.8(2.8)	61.3(3.1)
Science: Cue words	1992	67.2(1.7)	67.2(2.8)	67.3(2.9)	69.6(2.0)	58.1(4.5)	67.6(7.0)
	1990	68.9(2.1)	65.5(2.7)	72.2(2.8)	68.8(2.4)	71.4(4.8)	62.2(4.8)
	1988	68.4(3.3)	67.8(3.9)	68.9(4.8)	69.7(3.8)	63.9(7.8)	58.1(***)
	1984	58.4(1.4)	53.8(1.9)	63.4(1.4)	61.4(1.6)	47.9(3.5)	48.2(4.6)
Science: Area of study	1992	80.5(1.8)	79.6(2.3)	81.4(2.3)	84.5(1.9)	68.4(5.3)	70.4(5.4)
	1990	83.0(1.8)	81.0(2.4)	85.0(2.5)	85.8(2.1)	73.2(5.4)	75.4(***)
	1988	82.4(2.4)	81.6(2.6)	83.0(2.8)	86.8(2.2)	60.3(7.7)	75.5(9.1)
	1984	76.3(1.1)	73.8(1.6)	79.1(1.5)	79.6(1.3)	63.6(2.8)	67.0(4.0)
Biography: Honors	1992	94.5(1.0)	93.8(1.5)	95.3(1.6)	96.0(1.1)	91.5(3.2)	89.7(4.1)
	1990	96.4(0.6)	95.2(1.0)	97.6(0.8)	96.9(0.6)	95.6(1.9)	91.2(4.6)
	1988	93.6(1.2)	89.7(2.3)	97.0(0.8)	95.8(0.8)	86.8(4.4)	85.5(7.6)
	1984	94.7(0.8)	92.3(1.2)	97.2(0.6)	95.5(0.8)	91.7(1.5)	91.8(1.9)
Biography: Accomplishments	1992	94.7(1.2)	94.0(1.4)	95.5(1.5)	96.3(1.0)	94.6(2.5)	85.3(5.7)
	1990	96.8(0.6)	95.1(1.3)	98.4(0.7)	97.2(0.6)	96.3(1.9)	95.8(3.7)
	1988	94.9(1.0)	91.6(1.9)	97.8(0.8)	95.0(1.1)	96.8(2.4)	89.3(7.0)
	1984	96.2(0.5)	94.2(0.8)	98.4(0.4)	96.3(0.5)	96.3(1.1)	96.3(1.4)
Sport history: Popularity	1992	86.8(1.3)	84.0(2.1)	89.7(1.7)	88.7(1.6)	77.9(3.4)	87.0(5.6)
	1990	85.3(1.6)	84.4(2.4)	86.3(1.8)	88.4(1.6)	78.9(4.6)	78.7(7.0)
	1988	79.0(1.6)	79.1(3.1)	78.8(2.2)	79.3(2.0)	79.4(4.9)	70.6(9.0)
	1984	82.0(1.0)	80.7(1.4)	83.3(1.1)	83.3(1.0)	75.4(2.8)	77.3(3.8)
Sport history: Royalty	1992	90.1(1.4)	87.2(2.1)	93.0(1.7)	90.9(1.6)	83.6(3.3)	94.1(3.0)
	1990	90.8(1.6)	87.5(2.6)	94.3(1.4)	91.9(1.8)	83.1(4.9)	93.4(2.9)
	1988	86.8(1.9)	85.5(2.9)	88.1(2.3)	86.8(2.2)	82.6(4.1)	92.7(4.8)
	1984	90.2(0.9)	88.9(1.2)	91.5(0.9)	91.7(0.9)	83.6(2.8)	85.5(2.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Sport history: General	1992	83.4(1.6)	77.1(2.6)	89.8(1.7)	84.6(1.9)	81.1(4.7)	76.0(8.0)
	1990	81.9(2.0)	76.8(2.7)	87.2(2.2)	84.7(2.0)	72.8(5.1)	79.1(7.4)
	1988	76.1(2.2)	68.9(3.5)	83.3(2.2)	74.8(2.9)	75.5(5.5)	86.5(5.3)
	1984	79.8(0.8)	75.4(1.1)	84.3(1.0)	82.0(0.8)	71.6(3.8)	67.0(2.5)
Sport history: English	1992	62.5(1.5)	65.3(2.3)	59.8(2.0)	64.3(1.6)	55.9(5.6)	57.1(***)
	1990	67.9(1.5)	67.1(2.5)	68.8(2.3)	69.6(1.8)	61.7(5.4)	64.2(7.5)
	1988	56.9(2.5)	57.0(3.6)	56.9(3.5)	55.4(2.9)	55.1(4.1)	73.7(8.8)
	1984	62.6(1.5)	65.9(1.7)	59.2(2.1)	65.1(1.5)	52.3(3.6)	50.5(2.6)
Sport history: Contemporary	1992	88.6(1.3)	90.3(1.9)	86.8(2.1)	91.2(1.4)	81.1(4.8)	74.8(8.7)
	1990	89.5(1.5)	90.5(2.1)	88.6(1.8)	92.7(1.5)	78.8(4.5)	82.9(7.2)
	1988	90.3(1.7)	91.0(2.3)	89.5(1.9)	91.2(2.1)	87.3(2.8)	87.0(5.6)
	1984	89.0(0.8)	90.1(1.0)	87.9(1.1)	92.1(0.8)	77.7(2.5)	77.5(5.0)
Civics: Document description	1992	50.3(1.9)	47.6(2.8)	53.0(2.6)	53.4(2.3)	39.0(4.3)	43.1(8.6)
	1990	48.8(1.8)	44.2(2.6)	53.5(2.8)	52.5(1.9)	34.4(4.5)	45.6(8.5)
	1988	46.2(1.9)	42.9(3.7)	49.6(2.6)	50.2(2.5)	32.3(5.1)	33.5(8.5)
	1984	46.8(1.4)	43.3(2.1)	50.4(1.7)	50.4(1.4)	34.2(3.2)	32.0(4.1)
Civics: Importance of court	1992	61.7(1.7)	62.1(2.2)	61.3(2.7)	66.6(2.1)	47.3(5.2)	40.4(9.0)
	1990	62.5(1.8)	63.1(3.2)	61.9(3.2)	66.4(2.0)	47.9(4.8)	51.9(8.5)
	1988	62.7(3.1)	63.6(3.8)	61.8(3.0)	63.5(4.0)	53.4(4.4)	75.3(6.5)
	1984	60.3(1.0)	60.2(1.6)	60.5(1.4)	60.9(1.1)	57.7(3.2)	56.0(5.3)
Civics: Vocabulary	1992	20.5(1.4)	18.1(2.2)	22.9(1.8)	22.3(1.6)	13.7(4.3)	9.7(5.6)
	1990	21.3(1.5)	19.7(2.0)	23.0(2.3)	24.6(1.7)	12.0(3.8)	9.3(3.6)
	1988	20.2(2.1)	20.6(3.3)	19.9(3.4)	21.2(2.5)	14.5(4.1)	15.2(4.4)
	1984	22.3(1.2)	23.5(1.6)	21.0(1.4)	25.2(1.5)	9.8(1.7)	12.5(2.5)
U.S. History: Transportation	1992	93.5(0.9)	93.0(1.6)	94.0(1.4)	95.4(0.9)	84.8(3.7)	89.0(6.7)
	1990	92.1(1.3)	89.4(2.0)	95.0(1.3)	93.3(1.1)	87.4(4.0)	91.9(5.0)
	1988	91.7(1.5)	91.9(1.8)	91.4(2.7)	93.3(1.8)	89.6(4.2)	76.9(6.4)
	1984	93.6(0.7)	92.4(0.8)	94.8(0.8)	95.1(0.7)	88.8(1.7)	85.2(3.2)
U.S. History: Vocabulary	1992	88.1(1.4)	91.1(1.8)	85.1(2.4)	92.5(1.2)	70.8(5.3)	78.3(***)
	1990	86.8(1.8)	88.9(2.5)	84.7(2.1)	88.9(1.6)	78.3(5.7)	87.5(6.8)
	1988	88.6(1.4)	88.2(2.5)	89.1(2.1)	89.9(1.4)	82.3(3.7)	86.5(5.4)
	1984	88.5(0.8)	88.5(1.2)	88.5(0.9)	90.5(0.9)	80.9(2.3)	77.7(3.2)
Summer job: Apply for SS card	1992	91.8(1.1)	88.2(1.8)	95.9(1.3)	93.9(1.2)	77.8(4.0)	95.0(2.8)
	1990	91.4(1.4)	88.7(2.0)	94.2(1.5)	92.5(1.6)	84.1(4.2)	92.8(4.2)
	1988	93.5(1.2)	90.3(2.2)	96.7(1.1)	95.0(1.4)	91.2(2.8)	75.1(5.8)
	1984	91.2(0.8)	88.1(1.1)	94.5(0.8)	92.6(0.7)	86.0(1.9)	86.2(3.8)
Summer job: When to look	1992	83.6(1.6)	80.0(2.5)	87.6(1.6)	88.0(1.6)	66.5(5.7)	71.2(7.6)
	1990	81.5(1.6)	80.7(2.0)	82.4(2.3)	85.3(1.7)	76.5(4.4)	66.9(5.8)
	1988	82.9(1.8)	78.6(2.8)	87.1(2.0)	88.0(1.8)	68.2(5.0)	63.4(7.6)
	1984	85.1(0.8)	83.1(1.1)	87.2(1.1)	87.7(0.9)	76.5(2.4)	74.3(4.2)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Summer job: Documents needed	1992	70.8(2.0)	67.1(2.5)	75.1(2.5)	74.9(2.2)	54.5(6.5)	60.8(6.2)
	1990	74.4(1.5)	68.7(2.3)	80.5(2.6)	78.2(1.8)	59.0(4.4)	67.4(6.4)
	1988	77.8(1.9)	75.5(2.5)	80.0(2.9)	82.0(1.7)	65.4(4.7)	60.3(***)
	1984	73.6(1.1)	72.0(1.8)	75.4(1.4)	76.4(1.3)	63.6(2.8)	63.8(3.6)
Summer job: Job references	1992	81.3(1.5)	77.1(2.1)	86.0(1.9)	86.5(1.5)	63.0(6.8)	61.0(6.0)
	1990	86.6(1.5)	83.9(2.1)	89.4(1.5)	88.7(1.4)	79.5(4.6)	87.1(4.8)
	1988	86.9(1.5)	83.6(2.4)	90.2(1.7)	89.2(1.6)	79.5(4.9)	75.8(8.6)
	1984	83.6(0.7)	80.7(1.2)	86.7(1.3)	86.4(0.9)	74.0(2.8)	71.0(2.8)
Bobby story fact	1992	87.4(1.3)	85.9(1.9)	89.2(1.8)	88.5(1.4)	84.1(5.3)	86.4(5.9)
	1990	89.2(1.4)	86.6(2.0)	92.1(1.5)	90.4(1.5)	87.7(3.6)	80.7(5.2)
	1988	87.7(1.7)	82.7(2.8)	92.7(1.5)	88.5(1.7)	85.2(4.5)	84.1(6.2)
	1984	87.7(0.7)	84.6(1.1)	91.0(0.9)	89.2(0.8)	82.4(2.0)	78.0(3.4)
"Learn to read": Same meaning	1992	93.8(1.1)	90.2(1.7)	97.8(0.6)	95.8(1.0)	88.0(4.4)	90.7(3.8)
	1990	91.2(1.4)	88.3(1.9)	94.3(1.3)	91.5(1.7)	91.5(3.1)	86.7(6.2)
	1988	93.0(1.3)	92.6(2.3)	93.5(1.6)	94.6(1.1)	86.4(5.4)	87.7(5.4)
	1984	90.7(0.6)	88.5(0.9)	93.0(0.9)	91.5(0.7)	88.7(1.8)	85.1(4.5)
Comparison of characteristics	1992	80.6(1.4)	77.1(2.7)	84.6(2.0)	83.4(1.7)	73.2(3.6)	62.9(5.2)
	1990	82.2(1.6)	77.5(2.1)	87.2(2.4)	83.9(1.7)	79.9(4.9)	70.0(5.4)
	1988	75.7(2.1)	77.2(3.2)	74.0(2.4)	77.8(2.4)	67.5(3.7)	71.0(8.3)
	1984	79.8(0.8)	77.7(1.3)	82.2(1.1)	82.2(1.0)	70.5(2.7)	72.5(2.9)
Steps in performing a trick	1992	91.6(1.2)	87.5(1.9)	96.1(1.2)	92.8(1.1)	84.8(5.0)	88.7(5.6)
	1990	91.4(1.3)	88.6(1.9)	94.3(1.4)	91.3(1.4)	91.0(3.1)	89.7(3.7)
	1988	93.8(1.3)	90.6(2.6)	97.0(1.0)	95.6(1.0)	87.7(5.8)	83.1(6.6)
	1984	90.1(0.9)	86.6(1.3)	93.9(0.9)	91.1(1.0)	86.5(1.8)	87.0(3.8)
Setting for a trick	1992	84.4(1.5)	79.7(2.3)	89.6(1.9)	88.6(1.4)	71.0(5.7)	63.9(6.0)
	1990	84.8(1.4)	81.9(2.1)	87.9(1.7)	86.8(1.6)	80.2(4.0)	73.9(5.5)
	1988	83.8(1.8)	82.0(2.5)	85.5(2.6)	85.4(2.2)	74.7(3.9)	82.2(6.8)
	1984	83.7(1.0)	81.3(1.6)	86.4(1.2)	85.6(1.2)	77.7(2.5)	74.6(4.4)
Result of food chain	1992	84.8(1.5)	81.0(2.2)	89.0(1.6)	86.6(1.3)	77.6(5.2)	72.3(5.0)
	1990	85.9(1.2)	83.7(1.8)	88.2(1.8)	86.4(1.5)	80.0(5.0)	91.4(4.2)
	1988	80.3(1.6)	76.3(2.4)	84.1(2.6)	84.1(1.2)	70.4(6.0)	63.3(8.9)
	1984	82.0(0.9)	80.1(1.3)	83.9(1.2)	83.0(1.1)	79.3(3.8)	74.2(4.0)
Food chain main idea	1992	80.9(1.2)	78.4(2.2)	83.7(1.9)	84.7(1.4)	68.8(5.6)	61.2(6.0)
	1990	77.4(1.8)	76.4(2.8)	78.5(2.3)	79.7(2.1)	73.7(4.7)	64.3(7.6)
	1988	77.4(2.3)	77.1(3.4)	78.2(2.8)	81.3(2.6)	66.2(4.2)	67.7(***)
	1984	78.9(1.1)	79.1(1.9)	78.6(1.1)	81.2(1.4)	68.0(2.9)	67.3(3.9)
Best title for Scott story	1992	52.1(2.1)	52.0(2.7)	52.2(3.0)	54.9(2.7)	43.5(4.6)	46.3(6.4)
	1990	49.7(2.1)	45.9(2.9)	53.4(3.1)	52.7(2.2)	38.5(4.3)	41.9(9.6)
	1988	52.1(2.8)	49.2(4.9)	54.4(2.9)	51.4(3.4)	57.7(5.3)	41.6(7.9)
	1984	49.8(0.9)	48.9(1.4)	50.7(1.3)	51.4(1.2)	41.6(3.0)	42.6(2.7)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Scott story fact	1992	73.2(1.7)	69.9(2.4)	77.4(2.0)	71.6(1.9)	80.4(4.6)	70.8(7.0)
	1990	73.2(1.8)	73.8(2.7)	72.6(2.5)	73.5(1.7)	72.2(6.2)	70.1(7.4)
	1988	76.5(2.2)	69.8(3.1)	82.3(2.3)	75.7(2.6)	81.9(5.3)	69.7(8.4)
	1984	73.7(0.9)	70.8(1.5)	76.9(1.2)	73.3(1.1)	75.3(2.3)	73.8(4.0)
Scott story definition	1992	38.7(2.5)	38.9(3.0)	38.4(2.9)	36.7(2.3)	43.5(6.6)	44.2(8.5)
	1990	38.9(1.8)	35.7(2.2)	42.1(2.9)	43.0(2.0)	21.1(4.1)	23.3(9.2)
	1988	37.6(3.5)	35.8(5.7)	39.3(3.1)	38.7(4.2)	32.7(4.9)	35.1(9.7)
	1984	37.6(0.9)	35.8(1.4)	39.6(1.3)	38.9(1.1)	32.0(2.7)	34.8(1.9)
Women's vote: Central purpose	1992	77.4(1.4)	72.5(2.2)	83.6(2.1)	79.2(1.5)	67.6(4.3)	77.4(4.5)
	1990	81.8(1.7)	77.8(2.7)	85.8(1.9)	85.0(1.8)	62.6(5.3)	85.1(5.8)
	1988	83.3(1.4)	79.8(2.2)	86.4(2.1)	83.2(1.8)	79.7(3.4)	95.5(4.7)
	1984	79.9(1.0)	74.9(1.4)	85.2(1.3)	80.1(1.1)	80.1(2.7)	75.0(4.1)
Women's vote: Vocabulary	1992	59.2(1.8)	56.9(2.2)	62.1(2.8)	60.7(1.8)	52.6(6.9)	54.6(4.5)
	1990	59.7(1.8)	56.5(2.5)	62.8(2.9)	62.1(2.3)	48.5(4.8)	56.0(7.1)
	1988	57.6(2.1)	54.3(2.5)	60.2(3.2)	57.0(2.5)	61.8(4.6)	53.6(8.1)
	1984	59.6(1.1)	57.7(1.7)	61.6(1.1)	59.6(1.2)	63.4(3.2)	49.9(4.3)
Women's vote: Recall of fact	1992	66.4(2.1)	61.8(2.4)	72.2(2.6)	67.7(2.3)	64.9(6.1)	52.0(5.8)
	1990	64.5(2.0)	56.1(2.4)	72.7(2.7)	65.1(2.2)	59.3(4.8)	65.4(***)
	1988	67.6(3.3)	61.3(5.2)	73.5(2.9)	69.3(3.9)	59.6(5.8)	56.5(9.9)
	1984	66.0(1.2)	63.0(1.7)	69.2(1.5)	66.9(1.3)	65.1(2.6)	56.7(7.4)
Women's vote: Women join fight	1992	76.1(1.8)	71.0(2.5)	82.5(2.2)	77.2(2.1)	71.3(5.3)	72.6(5.5)
	1990	76.5(1.8)	72.2(2.9)	80.6(2.3)	79.7(2.0)	67.6(5.1)	64.8(***)
	1988	77.7(1.7)	71.7(2.8)	83.0(2.4)	80.5(2.1)	64.5(4.7)	70.0(6.7)
	1984	74.8(1.2)	70.2(1.5)	79.8(1.5)	76.4(1.3)	68.6(3.5)	68.8(5.1)
Women's vote: Woman's response	1992	74.4(1.5)	68.1(2.3)	82.5(1.9)	74.9(1.5)	72.2(5.8)	68.3(5.1)
	1990	76.1(1.9)	67.2(2.4)	84.6(2.5)	79.3(1.8)	64.7(6.1)	66.3(7.3)
	1988	77.0(2.2)	71.3(3.8)	82.0(2.8)	79.0(2.5)	64.8(5.4)	73.8(***)
	1984	75.5(1.1)	66.4(1.7)	85.2(1.4)	77.4(1.4)	65.9(2.4)	69.8(3.4)
Women's vote: National support	1992	67.9(2.2)	64.4(3.1)	72.5(2.6)	70.6(2.3)	58.7(5.8)	54.1(6.6)
	1990	67.5(2.1)	64.4(2.9)	70.4(2.9)	72.1(2.1)	48.5(5.5)	58.9(9.4)
	1988	71.5(1.2)	64.2(2.9)	78.2(1.7)	71.1(1.2)	71.3(4.5)	76.6(7.5)
	1984	66.2(1.1)	63.2(1.6)	69.4(1.7)	68.1(1.3)	57.8(2.9)	57.3(3.0)
Fact about pet care	1992	79.8(1.5)	75.6(2.0)	85.1(2.1)	83.6(1.5)	70.0(5.2)	67.8(5.5)
	1990	73.1(1.4)	68.4(2.5)	77.5(2.3)	80.5(1.4)	52.8(5.2)	38.9(6.6)
	1988	76.7(2.1)	68.6(3.4)	83.8(2.4)	78.7(2.2)	69.8(3.7)	67.2(***)
	1984	77.6(1.2)	74.0(1.9)	81.4(1.5)	81.5(1.3)	61.9(3.7)	54.6(5.3)
Fact about health of pet	1992	72.8(1.9)	68.2(2.8)	78.6(2.6)	76.5(2.2)	57.0(5.4)	72.6(6.6)
	1990	69.5(1.8)	63.4(2.7)	75.2(2.1)	74.3(1.7)	53.5(5.4)	61.0(6.8)
	1988	74.3(2.1)	72.6(3.5)	75.6(2.8)	78.4(2.1)	53.1(7.4)	72.8(7.0)
	1984	72.6(1.2)	71.0(2.0)	74.2(1.6)	76.8(1.3)	52.4(3.4)	57.1(5.5)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Sport: Main reason	1992	76.6(1.7)	75.3(2.3)	78.1(2.1)	80.5(2.2)	63.6(6.2)	58.7(6.9)
	1990	77.6(1.9)	73.6(2.6)	81.3(2.4)	81.4(1.9)	55.3(6.6)	74.4(6.8)
	1988	73.3(2.5)	73.7(4.3)	72.8(2.3)	76.7(2.8)	54.6(5.6)	62.2(5.5)
	1984	72.9(1.2)	69.3(1.4)	76.7(1.7)	75.8(1.3)	57.3(3.3)	57.3(6.3)
Survive climb: Conditions	1992	73.5(1.9)	75.8(3.2)	70.9(2.8)	79.9(1.7)	48.2(6.7)	68.1(6.7)
	1990	74.2(1.9)	73.2(2.3)	75.2(2.7)	78.4(1.9)	61.2(4.8)	64.2(***)
	1988	79.6(1.5)	81.4(2.3)	78.4(2.2)	83.3(1.7)	76.6(4.1)	44.8(6.2)
	1984	71.9(0.9)	73.3(1.5)	70.4(1.7)	75.0(1.0)	61.5(4.0)	57.7(3.1)
Survive climb: Character role	1992	64.7(1.6)	61.4(2.6)	68.4(2.7)	68.1(2.0)	50.4(5.8)	63.9(6.0)
	1990	63.3(1.9)	58.8(2.7)	67.7(2.7)	67.0(2.0)	48.7(5.0)	48.1(9.5)
	1988	62.6(1.9)	54.5(3.1)	69.6(2.8)	63.0(2.1)	65.1(4.1)	62.4(8.3)
	1984	60.1(1.1)	53.6(1.2)	66.9(1.7)	62.2(1.4)	49.6(3.5)	55.9(3.4)
Survive climb: Character trait	1992	75.6(1.7)	77.6(2.7)	73.3(2.6)	80.8(1.9)	56.7(5.4)	68.0(8.0)
	1990	75.7(1.8)	76.6(2.4)	74.8(2.5)	79.1(2.1)	63.1(4.8)	71.6(6.8)
	1988	79.4(1.9)	81.0(2.7)	77.9(3.1)	82.7(2.2)	74.4(5.3)	47.7(5.3)
	1984	74.7(1.3)	73.8(1.8)	75.6(1.7)	77.8(1.3)	64.0(3.6)	57.5(4.4)
Survive climb: Resolution	1992	76.3(1.5)	73.3(2.8)	79.6(2.2)	80.8(1.7)	58.1(4.3)	73.3(6.6)
	1990	74.8(1.8)	69.9(2.4)	79.7(2.3)	78.0(2.2)	60.2(5.0)	79.6(9.3)
	1988	74.9(1.9)	67.7(2.8)	81.5(2.6)	77.9(2.1)	68.5(4.0)	58.3(6.7)
	1984	75.2(1.0)	69.5(1.3)	81.2(1.4)	77.7(1.1)	64.8(2.4)	67.0(4.7)
Phone document for New York	1992	72.6(2.0)	75.4(2.8)	69.4(3.0)	77.5(1.5)	47.4(7.6)	73.5(7.2)
	1990	71.3(2.0)	71.1(2.9)	71.5(2.3)	72.7(2.3)	59.6(7.2)	73.3(9.1)
	1988	74.7(2.2)	75.4(3.1)	74.4(2.8)	77.9(2.4)	62.5(4.8)	63.8(7.6)
	1984	69.9(1.1)	68.8(1.6)	71.0(1.7)	72.2(1.2)	57.2(3.4)	66.8(4.8)
Phone document for Syracuse	1992	85.1(1.6)	86.3(2.1)	83.9(2.1)	87.2(1.5)	78.5(5.3)	83.4(5.0)
	1990	84.6(1.3)	86.0(2.0)	83.3(1.8)	87.0(1.4)	78.2(4.1)	80.4(7.3)
	1988	87.1(2.1)	88.9(2.4)	85.5(2.6)	88.4(2.0)	88.6(4.2)	74.8(7.5)
	1984	84.8(0.8)	82.5(1.2)	87.3(1.2)	85.8(1.0)	78.7(2.7)	84.2(2.6)
Tiresome jobs – 1900's	1992	62.1(1.7)	58.9(2.5)	65.6(2.5)	67.2(1.8)	34.3(5.6)	66.6(4.8)
	1990	66.6(1.7)	64.4(2.5)	68.9(2.6)	71.2(2.0)	47.3(5.3)	71.7(***)
	1988	68.9(2.4)	63.8(2.5)	73.7(3.8)	69.6(3.1)	64.1(4.5)	66.9(6.5)
	1984	70.4(1.0)	66.2(1.8)	74.9(1.3)	73.0(1.2)	58.3(3.4)	62.5(6.7)
Jobs in the woods – 1900's	1992	76.3(1.6)	74.5(2.8)	78.4(2.3)	82.0(1.7)	56.4(6.4)	64.3(5.6)
	1990	81.6(1.5)	79.3(2.0)	83.8(2.1)	84.0(1.7)	72.2(4.1)	79.3(9.6)
	1988	82.6(1.4)	81.9(2.2)	83.3(2.4)	84.9(1.6)	73.3(4.2)	78.3(5.3)
	1984	79.5(1.1)	73.3(1.9)	85.8(1.2)	81.8(1.3)	66.9(3.0)	75.0(4.9)
Home jobs – 1900's	1992	85.6(1.5)	79.9(2.6)	92.0(1.3)	89.2(1.3)	73.7(4.7)	74.8(6.7)
	1990	88.1(1.1)	81.7(2.1)	94.4(1.1)	89.8(1.5)	81.0(3.3)	82.1(8.9)
	1988	89.0(1.7)	82.4(2.9)	94.7(1.3)	90.4(2.1)	84.7(3.8)	79.5(5.6)
	1984	87.7(0.8)	82.4(1.4)	93.2(0.8)	89.1(1.0)	80.2(3.4)	86.7(3.3)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
History of arts before 1940	1992	42.9(2.2)	46.2(3.4)	39.1(3.0)	49.0(3.0)	28.3(3.8)	23.3(5.4)
	1990	41.4(2.0)	41.6(2.9)	41.3(2.4)	47.0(2.2)	24.2(3.6)	21.9(6.5)
	1988	45.2(2.4)	47.1(3.0)	43.4(3.5)	49.7(3.0)	33.8(4.7)	16.1(7.1)
	1984	39.3(1.3)	39.1(1.5)	39.5(1.6)	41.8(1.5)	24.8(2.2)	38.1(6.0)
Historical privilege of arts	1992	47.8(1.9)	46.8(2.6)	48.9(2.4)	55.0(2.6)	26.6(4.6)	35.5(5.2)
	1990	48.4(2.0)	47.3(3.5)	49.5(2.7)	52.5(2.1)	32.0(5.5)	35.7(4.0)
	1988	51.9(2.8)	49.3(3.2)	54.2(3.9)	55.9(3.1)	40.9(5.0)	28.1(6.4)
	1984	50.8(1.4)	47.3(1.6)	54.3(1.7)	52.3(1.6)	41.8(2.7)	49.2(4.0)
Mass production of art	1992	30.3(2.0)	28.6(2.8)	32.2(2.8)	33.8(2.6)	20.0(4.8)	23.8(5.6)
	1990	28.8(1.8)	31.2(2.8)	26.5(2.2)	28.7(1.9)	24.0(5.8)	34.0(8.5)
	1988	28.4(2.0)	23.2(3.6)	32.9(3.1)	28.8(2.0)	25.8(5.4)	24.7(6.9)
	1984	31.4(1.0)	28.3(1.4)	34.5(1.5)	32.3(1.3)	27.7(2.4)	25.7(8.3)
History of gold rush fact	1992	81.5(1.5)	79.4(2.4)	83.9(2.0)	85.6(2.1)	71.2(3.2)	72.4(6.4)
	1990	79.6(1.5)	79.0(2.1)	80.2(2.2)	84.0(1.6)	62.2(5.4)	69.3(5.8)
	1988	73.5(1.9)	67.7(3.1)	78.6(3.1)	74.8(2.1)	71.9(4.0)	61.1(9.9)
	1984	71.7(1.3)	66.4(1.3)	77.3(1.5)	75.2(1.2)	62.0(3.0)	50.3(7.1)
Traffic violation fact	1992	75.9(1.6)	72.7(2.7)	79.5(2.1)	76.6(1.6)	74.1(3.9)	77.8(6.3)
	1990	76.5(1.7)	73.8(2.3)	79.0(2.7)	76.4(1.9)	75.2(5.3)	73.4(4.8)
	1988	76.0(1.8)	74.1(2.9)	77.6(2.8)	78.0(2.3)	64.6(4.6)	77.4(6.6)
	1984	74.5(1.2)	73.6(1.4)	75.5(1.8)	77.2(1.3)	63.2(2.9)	67.9(3.2)
Cost of traffic fine	1992	67.2(1.9)	65.1(2.8)	69.6(2.9)	74.3(2.0)	46.8(5.2)	55.5(5.5)
	1990	64.7(2.4)	65.9(3.3)	63.5(3.3)	71.3(2.5)	43.3(5.2)	44.5(7.0)
	1988	60.3(2.6)	63.5(4.5)	57.5(3.9)	64.9(2.9)	47.0(7.3)	33.1(***)
	1984	64.8(1.6)	64.5(1.9)	65.0(1.9)	68.4(1.7)	50.6(3.9)	51.9(6.5)
Traffic fine payment fact	1992	48.7(2.3)	46.5(3.1)	51.1(3.4)	53.3(3.1)	39.3(5.0)	29.3(5.6)
	1990	49.3(1.9)	47.7(2.5)	50.8(3.0)	49.3(2.2)	43.4(4.2)	60.2(6.0)
	1988	46.7(2.1)	44.6(3.1)	48.4(3.6)	48.9(3.0)	41.1(4.4)	30.8(***)
	1984	43.9(1.3)	43.9(2.2)	43.9(1.3)	47.0(1.6)	28.7(1.9)	40.5(5.3)
Frozen pizza: Reason produced	1992	70.5(2.1)	66.5(3.0)	75.0(2.6)	76.1(2.3)	46.0(4.2)	68.1(7.1)
	1990	74.5(1.8)	74.0(2.5)	75.0(2.2)	78.4(1.9)	60.2(5.3)	63.9(7.8)
	1988	71.2(2.2)	68.2(3.8)	73.8(3.1)	73.7(2.5)	65.5(4.4)	54.8(***)
	1984	72.4(1.4)	69.0(1.8)	75.9(1.6)	74.8(1.6)	64.6(3.2)	57.3(4.7)
Frozen pizza: Middle stage	1992	65.3(2.5)	61.2(3.3)	70.0(2.5)	70.2(2.7)	54.7(6.0)	45.6(6.9)
	1990	68.9(1.7)	65.6(3.0)	72.2(2.5)	71.0(2.0)	62.4(4.6)	59.5(5.5)
	1988	68.1(2.6)	61.7(4.0)	73.5(2.9)	71.9(3.1)	59.0(7.1)	38.3(7.4)
	1984	63.6(1.4)	58.9(2.1)	68.5(1.6)	65.6(1.7)	54.5(4.1)	55.0(6.5)
Frozen pizza: Ingredients used	1992	47.9(2.1)	46.5(2.6)	49.5(2.9)	52.8(2.6)	20.5(4.0)	49.6(7.5)
	1990	53.4(2.1)	49.4(3.4)	57.4(2.7)	55.7(2.4)	45.0(5.6)	43.7(5.0)
	1988	50.7(2.7)	47.9(3.3)	53.0(4.0)	52.7(3.5)	48.0(5.8)	26.1(6.6)
	1984	45.3(1.2)	38.5(1.6)	52.2(1.7)	48.4(1.3)	31.0(3.8)	25.5(2.9)

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Reading Trend Assessments — Age 17

Weighted percentage correct by subgroups across assessment years (continued)

ITEM DESCRIPTION	YEAR	NATION	MALE	FEMALE	WHITE	BLACK	HISPANIC
Purpose of business article	1992	67.6(2.7)	66.9(3.2)	68.2(3.3)	67.6(3.0)	66.5(5.1)	66.0(6.2)
	1990	69.8(1.6)	71.1(2.4)	68.4(2.5)	71.3(1.8)	63.4(4.5)	73.6(5.7)
	1988	72.5(2.6)	72.8(3.1)	72.1(3.2)	75.7(3.0)	57.5(6.0)	71.1(6.2)
	1984	66.2(0.8)	62.8(1.3)	69.6(1.2)	69.4(0.9)	54.2(2.4)	52.3(2.6)
Identify business liability	1992	61.6(2.3)	59.5(3.7)	63.5(2.2)	65.4(2.9)	46.8(5.3)	43.4(8.2)
	1990	62.8(1.8)	60.0(2.7)	65.7(2.4)	64.4(2.0)	58.2(4.7)	53.4(8.7)
	1988	65.4(2.4)	64.8(2.5)	66.2(3.3)	69.5(2.9)	57.6(5.1)	39.2(8.9)
	1984	63.7(1.1)	61.1(0.9)	66.5(2.0)	68.5(1.2)	47.6(2.8)	46.2(2.6)
Define business profit	1992	92.2(1.2)	90.7(1.6)	93.6(1.5)	95.1(1.1)	81.6(4.9)	81.5(7.9)
	1990	93.4(0.9)	92.4(1.4)	94.5(1.4)	93.7(1.1)	95.0(2.4)	86.2(6.7)
	1988	95.2(1.0)	96.0(1.3)	94.4(1.6)	96.4(1.1)	90.5(3.0)	91.5(5.0)
	1984	93.2(0.4)	92.4(0.8)	93.9(0.7)	95.0(0.5)	87.1(2.0)	86.9(1.9)
Sioux story: Author's view	1992	66.6(1.8)	64.6(3.0)	68.4(2.4)	69.7(1.8)	57.2(5.5)	58.5(7.6)
	1990	64.2(2.3)	61.2(3.3)	67.2(3.1)	66.2(2.0)	55.3(6.1)	65.5(***)
	1988	69.1(2.4)	73.6(4.1)	65.2(2.7)	70.7(2.8)	70.4(3.9)	47.4(8.1)
	1984	69.5(0.8)	69.8(1.0)	69.1(1.1)	73.0(0.9)	53.1(2.1)	65.5(2.3)
Sioux story: Inference	1992	65.4(2.3)	63.3(3.6)	67.3(2.3)	69.3(2.6)	46.2(6.4)	58.9(6.9)
	1990	61.2(2.0)	62.7(3.1)	59.7(3.0)	65.9(2.2)	39.0(5.3)	63.9(9.5)
	1988	66.9(2.1)	71.0(3.4)	63.2(3.3)	71.4(2.2)	49.5(5.5)	59.4(7.6)
	1984	67.4(1.2)	68.8(1.2)	66.1(1.6)	72.3(1.2)	47.2(2.4)	54.0(5.1)
Sioux story: Major event	1992	59.5(2.1)	59.5(3.4)	59.5(2.7)	65.5(2.3)	34.0(6.8)	53.1(8.4)
	1990	61.0(2.1)	59.7(2.8)	62.4(3.2)	66.8(2.1)	39.1(5.6)	51.3(***)
	1988	62.5(2.4)	63.7(3.1)	61.7(3.7)	68.2(2.7)	44.8(4.9)	42.7(8.3)
	1984	63.4(1.0)	64.1(1.3)	62.6(1.5)	67.5(1.1)	43.0(3.2)	56.4(5.7)
Sioux story: Main purpose	1992	71.1(2.1)	68.4(3.5)	73.4(3.2)	76.1(2.1)	48.0(5.4)	66.0(8.1)
	1990	70.7(2.9)	66.8(3.2)	74.7(2.5)	73.6(2.2)	57.1(4.1)	72.6(8.8)
	1988	70.5(2.2)	74.8(3.5)	66.8(3.3)	75.1(2.4)	55.4(5.8)	50.9(6.6)
	1984	71.8(0.9)	72.2(1.2)	71.4(1.2)	76.4(0.8)	51.5(3.1)	57.3(4.4)

The standard errors of the estimated percentages appear in parentheses.

Data Appendix

Writing

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	203.8(1.5)	205.7(1.6)	201.7(1.5)*	207.1(1.5)	N
SEX					
Male	53.3(1.7)	50.4(1.0)	51.2(1.0)	50.4(0.6)	
	200.5(2.8)	199.0(2.3)	195.0(1.9)	198.3(1.7)	N
Female	46.7(1.7)	49.6(1.0)	48.8(1.0)	49.6(0.6)	
	207.6(3.1)*	212.6(2.0)	208.7(2.2)*	216.1(1.7)†	N
RACE/ETHNICITY					
White	70.9(1.0)	70.0(0.3)	70.0(0.3)	70.8(0.3)	
	210.7(1.9)	214.9(1.9)	211.0(2.0)	216.7(1.7)	N
Black	14.6(0.9)	15.5(0.2)	15.3(0.3)	15.6(0.2)	
	181.6(5.0)	173.3(4.7)	171.4(5.4)	175.0(3.8)	N
Hispanic	11.4(0.7)	10.6(0.3)	10.8(0.2)*	9.9(0.2)	
	188.5(5.8)	190.3(3.5)	184.1(4.1)	189.4(3.6)	N
Other	3.0(0.5)	3.9(0.2)	3.8(0.1)	3.6(0.2)	
	208.2(6.1)	211.0(4.8)	201.7(7.0)	206.9(2.6)	N
MODAL AGE					
Less Than Modal Age	0.9(0.3)	0.8(0.2)*	0.3(0.1)	0.3(0.1)	
	204.1(21.1)	224.6(12.8)*	225.7(21.8)*	165.8(10.6)	Q
At Modal Age	62.8(1.0)*	61.2(0.5)*	59.4(1.1)	55.8(1.1)†	
	211.6(2.5)	209.8(2.5)	205.1(2.7)	212.0(1.5)	N
Greater Than Modal Age	36.3(1.0)*	38.1(0.6)*	40.3(1.1)†	43.9(1.1)†	
	190.3(4.5)	198.7(2.0)	196.4(1.7)	201.2(1.9)	L

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
REGION					
Northeast	20.1(0.7)	23.4(1.7)	22.1(1.0)	21.0(1.3)	
	212.4(4.0)	204.0(4.9)	211.1(3.6)	216.1(4.0)	N
Southeast	24.9(1.5)	26.1(1.7)	24.4(1.2)	23.8(1.3)	
	203.5(3.3)*	200.1(3.2)	192.3(4.0)	193.0(2.4)†	L
Central	27.7(1.5)	22.9(0.5)†*	24.8(0.7)*	27.6(0.8)	
	200.8(2.6)*	211.9(3.0)†	203.0(3.1)*	213.9(3.1)†	L
West	27.3(0.9)	27.5(1.1)	28.8(0.8)	27.6(0.7)	
	200.8(4.9)	207.3(3.4)	201.2(2.7)	205.7(2.2)	N
TYPE OF COMMUNITY					
Extreme Rural	6.3(1.2)	9.9(2.5)	10.3(2.4)	10.5(3.0)	
	188.2(7.0)	202.3(3.8)	201.9(3.9)	203.2(4.5)	N
Disadvantaged Urban	12.5(2.2)	8.4(2.6)	9.9(3.1)	9.1(1.8)	
	199.2(5.6)	174.8(7.3)†	175.2(6.4)†	183.9(4.1)	LQ
Advantaged Urban	13.1(2.3)	13.7(2.3)	10.3(2.0)	9.5(1.9)	
	221.2(6.5)	218.4(4.1)*	216.8(4.5)*	235.9(2.6)	Q
Other	68.1(2.7)	68.0(4.3)	69.4(4.6)	70.8(3.8)	
	202.8(1.6)	207.4(2.2)	203.2(2.1)	206.9(1.7)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	6.6(0.6)*	5.2(0.7)	5.5(0.5)	4.5(0.4)†	
	178.7(4.6)	194.2(5.4)	185.7(3.9)	191.2(3.2)	N
Graduated H.S.	20.5(1.1)*	17.8(1.1)	18.2(0.9)	16.5(0.7)†	
	191.8(3.4)	199.4(3.0)	196.6(3.0)	202.2(3.2)	L
Some Educ After H.S.	4.6(0.4)	5.2(0.5)	4.8(0.4)	5.7(0.4)	
	208.0(6.5)	211.4(6.3)	213.9(4.0)	201.4(4.5)	N
Graduated College	32.8(1.4)*	41.3(1.5)†	39.7(1.6)†	41.8(1.0)†	
	218.1(3.0)	212.4(2.2)	209.0(1.6)†	213.7(1.4)	Q
Unknown	34.5(1.3)	30.2(1.4)	31.8(1.1)	31.1(1.0)	
	202.8(2.5)	201.5(2.7)	196.5(2.2)*	204.7(2.3)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL					
Public	85.8(1.9)	87.5(3.0)	91.8(1.8)	88.0(1.7)	
	201.9(1.8)	204.2(2.0)	200.4(1.4)	205.2(1.6)	N
Non-Public	14.2(1.9)	12.5(3.0)	8.2(1.8)	12.0(1.7)	
	215.4(4.6)	216.0(4.1)	216.2(5.7)	221.6(3.3)	N
QUARTILES					
Upper	25.1(1.2)	25.0(1.4)	25.0(0.8)	25.0(0.8)	
	240.5(2.3)	246.7(1.7)	242.1(1.6)	245.7(1.3)	N
Middle Two	50.1(1.5)	50.0(1.0)	50.0(1.1)	49.9(1.0)	
	204.2(1.4)	206.9(1.5)	203.1(1.5)	208.2(1.7)	N
Lower	24.8(1.6)	25.0(1.2)	25.0(1.3)	25.0(0.8)	
	165.9(2.6)	162.3(1.8)	158.4(2.4)*	166.5(1.4)	Q

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	266.7(2.0)*	263.7(1.3)*	256.6(1.2)†*	274.4(1.3)†	Q
SEX					
Male	50.7(1.2)	49.4(1.1)	50.5(0.9)	49.5(0.8)	
	257.5(2.3)	253.7(1.5)*	245.6(1.5)†*	263.6(1.9)	Q
Female	49.3(1.2)	50.6(1.1)	49.5(0.9)	50.5(0.8)	
	276.2(2.4)*	273.5(1.7)*	267.9(1.3)†*	285.0(1.3)†	Q
RACE/ETHNICITY					
White	75.7(0.9)*	70.6(0.2)†	70.2(0.2)†	70.3(0.3)†	
	271.7(2.1)*	269.1(1.3)*	262.1(1.6)†*	279.2(1.3)†	Q
Black	12.4(0.6)*	14.9(0.2)†*	15.1(0.2)†	15.5(0.1)†	
	247.1(5.7)	246.0(3.5)	239.0(2.3)*	258.1(4.0)	Q
Hispanic	8.1(0.7)*	10.3(0.1)†	10.3(0.2)†	10.2(0.2)†	
	246.9(6.4)*	250.4(2.5)*	245.7(2.8)*	265.0(2.2)†	LQ
Other	3.8(0.4)	4.2(0.1)	4.4(0.1)	4.0(0.1)	
	272.5(4.3)	268.9(2.9)	255.4(2.9)†*	275.5(4.8)	Q
MODAL AGE					
Less Than Modal Age	1.0(0.3)	1.0(0.2)	0.7(0.2)	0.9(0.2)	
	241.7(11.5)*	258.6(17.4)	304.4(11.4)†	289.1(11.4)†	L
At Modal Age	63.7(1.4)*	58.9(0.2)†	59.4(0.3)†	58.1(1.2)†	
	272.1(1.8)*	270.6(1.2)*	261.8(1.5)†*	282.1(1.3)†	LQ
Greater Than Modal Age	35.3(1.4)*	40.1(0.3)†	39.9(0.3)†	41.0(1.2)†	
	257.7(3.2)	253.8(1.9)*	248.0(1.7)†*	263.1(1.8)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
REGION					
Northeast	23.4(1.0)	22.8(2.2)	22.8(1.0)	20.9(1.0)	
	273.3(3.6)	265.1(2.7)*	261.4(3.3)†*	284.7(3.3)	Q
Southeast	23.4(1.7)	23.7(1.3)	24.6(1.1)	24.6(1.5)	
	266.9(3.6)	268.2(2.3)	251.8(2.8)†*	266.3(2.2)	N
Central	26.9(1.6)	25.9(2.2)	23.2(0.7)	25.0(1.0)	
	263.8(2.3)*	258.1(2.2)*	259.1(3.9)*	277.2(2.0)†	LQ
West	26.3(0.8)	27.6(1.1)	29.4(1.0)†	29.4(1.2)	
	263.5(3.0)	264.0(2.1)*	255.0(2.6)*	271.3(2.3)	Q
TYPE OF COMMUNITY					
Extreme Rural	5.2(1.1)	5.9(1.8)	10.0(2.9)	10.5(2.1)	
	259.6(3.6)	268.3(4.1)	252.3(6.0)	267.3(3.2)	N
Disadvantaged Urban	8.4(1.3)	7.0(2.1)	8.6(1.5)	8.8(1.3)	
	249.2(8.5)	245.8(3.7)	244.5(3.8)	251.7(3.8)	N
Advantaged Urban	12.0(2.6)	13.9(3.7)	11.4(1.9)	11.7(2.2)	
	285.7(5.4)	270.9(3.3)*	279.4(3.9)*	293.5(3.7)	Q
Other	74.5(3.3)	73.2(4.6)	69.9(3.5)	68.9(3.2)	
	266.1(2.4)*	263.7(1.7)*	255.0(1.6)†*	275.1(1.7)†	Q
PARENTS' EDUCATION LEVEL					
Less Than H.S.	10.0(0.8)*	8.4(0.7)	7.6(0.6)	7.0(0.8)†	
	257.7(4.8)	254.3(3.9)	245.6(3.7)	257.9(5.3)	N
Graduated H.S.	34.8(1.4)*	31.4(1.2)	32.7(1.1)*	28.8(1.1)†	
	260.8(1.6)*	257.6(2.1)*	252.5(1.4)†*	267.9(1.6)†	Q
Some Educ After H.S.	9.5(0.8)*	10.8(0.6)	11.7(0.7)	12.4(0.7)†	
	271.4(3.9)	275.1(3.3)	266.9(3.0)*	279.6(2.2)	N
Graduated College	35.8(1.5)*	41.0(1.5)†	38.1(1.5)*	43.9(1.8)†	
	277.8(1.8)*	270.5(1.8)†*	264.9(1.8)†*	284.3(1.9)†	Q
Unknown	8.9(0.8)	8.0(0.5)	9.6(0.6)	7.8(0.6)	
	249.2(6.7)	248.3(2.3)	235.1(2.8)*	249.6(3.1)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL					
Public	86.9(1.6)	88.1(2.7)	87.1(1.9)	86.9(2.0)	
	264.4(2.0)*	262.1(1.5)*	253.6(1.2)†*	272.4(1.3)†	Q
Non-Public	13.1(1.6)	11.9(2.7)	12.9(1.9)	13.1(2.0)	
	281.8(5.5)	275.5(3.0)*	276.7(4.4)	287.6(3.2)	Q
QUARTILES					
Upper	25.0(1.4)	25.0(1.2)	25.0(1.2)	25.0(1.1)	
	297.1(1.4)*	295.5(1.3)*	294.2(1.1)*	310.6(1.0)†	LQ
Middle Two	49.8(1.7)	50.0(1.1)	50.0(1.0)	50.1(1.0)	
	268.3(2.4)*	264.5(1.0)*	256.6(1.0)†*	275.1(1.4)†	Q
Lower	25.2(1.3)	25.0(1.1)	25.0(0.9)	24.9(1.0)	
	233.2(3.2)	230.5(1.8)	219.1(1.5)†*	236.8(2.1)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years

	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	
	289.7(1.6)	291.3(1.3)	287.1(1.0)	287.3(1.4)	N
SEX					
Male	50.7(1.6)	46.9(1.5)*	50.9(0.8)	53.1(1.1)	
	281.1(1.4)	282.2(2.0)	276.4(1.6)	279.4(1.2)	N
Female	49.3(1.6)	53.1(1.5)*	49.1(0.8)	46.9(1.1)	
	298.6(2.5)	299.3(1.2)	298.2(1.5)	296.4(2.0)	N
RACE/ETHNICITY					
White	74.7(1.1)*	73.7(0.1)*	71.2(0.2)†	71.2(0.2)†	
	296.8(1.8)	296.2(1.3)	292.8(1.2)	294.1(1.2)	N
Black	14.6(1.0)	14.9(0.1)*	15.5(0.2)*	13.9(0.2)	
	270.3(3.6)	275.2(2.9)*	268.2(2.3)	263.2(3.2)	Q
Hispanic	7.9(0.6)*	8.0(0.1)*	8.7(0.1)*	10.6(0.2)†	
	259.1(6.6)	273.8(4.4)	276.9(2.6)†	273.6(3.8)	L
Other	2.8(0.3)*	3.4(0.1)†*	4.5(0.0)†	4.4(0.2)†	
	288.6(5.8)	295.5(3.7)	282.3(5.5)	287.1(3.0)	N
MODAL AGE					
Less Than Modal Age	13.2(1.3)	11.3(0.8)	11.2(0.7)	9.7(0.8)	
	294.5(3.8)	299.3(2.1)	295.3(4.3)	294.8(4.0)	N
At Modal Age	67.1(1.2)	67.5(0.2)*	63.9(0.2)†	64.4(0.2)	
	295.5(1.4)	296.8(1.2)	292.4(1.1)	293.4(1.7)	N
Greater Than Modal Age	19.6(1.5)*	21.2(0.7)*	24.9(0.7)†	26.0(0.9)†	
	266.8(3.1)	269.5(4.5)	269.9(2.0)	269.4(2.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
REGION					
Northeast	26.4(0.8)*	22.6(0.8)†	22.1(1.0)†	22.0(0.9)†	
	290.9(3.0)	295.0(2.8)	295.4(2.5)	290.2(2.3)	N
Southeast	21.8(1.7)	22.0(1.0)	23.4(0.9)	23.6(1.4)	
	287.3(4.9)	289.4(2.2)*	280.0(2.3)	277.8(3.3)	N
Central	27.1(1.6)	27.1(1.7)	26.8(1.1)	25.8(1.1)	
	291.3(2.7)	291.8(4.0)	288.8(2.7)	291.4(2.2)	N
West	24.8(0.8)*	28.2(1.1)†	27.7(0.9)†	28.7(1.0)†	
	288.8(3.7)	289.2(2.3)	284.8(2.1)	289.4(2.1)	N
TYPE OF COMMUNITY					
Extreme Rural	5.9(1.2)	6.9(2.8)	12.9(1.9)†	10.0(2.3)	
	286.8(4.0)	291.9(3.4)	285.6(3.0)	288.5(3.2)	N
Disadvantaged Urban	11.2(2.1)	1.1(0.8)†*	8.9(2.2)	12.0(1.9)	
	267.1(5.0)	256.1(8.1)	273.4(3.8)	270.4(3.0)	N
Advantaged Urban	15.7(2.6)	17.0(4.0)	10.9(1.8)	9.4(1.7)	
	305.8(3.0)	295.2(2.7)†	295.2(5.0)	296.6(3.8)	L
Other	67.2(3.1)	74.9(4.9)	67.3(3.4)	68.5(3.2)	
	290.0(2.3)	290.9(1.3)	287.9(1.3)	288.9(1.6)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	10.7(1.2)	8.2(0.8)	8.5(0.5)	8.2(0.8)	
	273.6(5.2)	275.8(3.5)	268.0(4.0)	271.0(3.7)	N
Graduated H.S.	34.9(2.0)*	30.4(1.2)*	29.5(1.1)	26.7(0.9)†	
	283.5(3.0)	284.6(2.2)	278.2(1.9)	278.4(2.2)	N
Some Educ After H.S.	14.9(0.9)*	17.7(0.8)	18.4(0.6)†	19.7(0.8)†	
	297.6(2.5)	296.1(2.6)	292.2(2.7)	292.3(2.0)	N
Graduated College	35.6(1.6)*	40.9(1.8)	40.4(1.4)	42.6(1.4)†	
	299.9(2.4)	299.0(2.0)	297.5(2.0)	295.7(1.4)	N
Unknown	2.9(0.5)	2.7(0.3)	3.0(0.3)	2.6(0.3)	
	261.3(7.3)	267.6(4.7)	25[illegible]4.1)	259.1(6.6)	N

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* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted proficiency and percentage of subgroup members across assessment years (continued)

	1984	1988	1990	1992	TREND TESTS
TYPE OF SCHOOL					
Public	89.4(1.5)	86.0(3.8)	92.0(1.7)	90.6(2.2)	
	287.8(1.6)	289.9(1.2)	285.5(1.1)	286.5(1.6)	N
Non-Public	10.6(1.5)	14.0(3.8)	8.0(1.7)	9.4(2.2)	
	305.4(3.7)	299.7(3.6)	305.8(5.2)	295.4(4.4)	N
QUARTILES					
Upper	24.9(1.4)	24.9(1.4)	25.0(0.8)	24.9(1.0)	
	321.7(1.9)	319.8(1.3)	324.5(1.6)	319.1(2.0)	N
Middle Two	50.1(1.3)	50.2(1.1)	49.9(0.8)	50.2(1.1)	
	291.3(1.2)	292.6(1.2)	287.1(0.8)†	288.7(1.1)	L
Lower	24.9(1.4)	24.9(1.2)	25.0(0.9)	25.0(1.1)	
	254.5(2.0)	260.0(2.4)*	249.8(2.1)	253.1(1.5)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages and proficiencies appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 150

	1984	1988	1990	1992	TREND TESTS
TOTAL	92.6(1.3)	90.5(0.8)	88.8(1.1)*	92.7(0.5)	Q
SEX					
Male	91.6(1.8)	87.9(1.2)	85.9(1.7)	89.8(0.9)	Q
Female	93.8(1.8)	93.1(1.1)	91.9(1.2)*	95.7(0.8)	N
RACE/ETHNICITY					
White	96.1(1.1)	95.4(1.1)	94.0(0.9)*	96.9(0.3)	N
Black	81.3(3.1)	72.9(4.4)	70.5(4.8)	76.8(2.9)	N
Hispanic	84.3(6.3)	83.3(3.2)	81.2(2.7)	87.0(3.2)	N
Other	96.4(2.4)	92.4(2.6)	89.1(7.1)	94.0(2.9)	N
MODAL AGE					
Less Than Modal Age	95.4(0.0)	95.9(0.0)	96.5(0.0)	64.2(15.0)	LQ
At Modal Age	96.2(0.5)	92.4(0.9)†	90.3(1.7)†*	94.8(0.5)	LQ
Greater Than Modal Age	86.4(3.4)	87.3(1.6)	86.6(1.4)	90.2(1.1)	N
REGION					
Northeast	96.8(1.6)	89.2(2.3)†*	92.6(2.4)	95.6(1.1)	Q
Southeast	91.9(1.3)*	87.8(2.2)	82.8(3.0)†	85.9(1.5)†	L
Central	92.9(1.7)	94.5(2.0)	90.7(1.6)	95.4(1.3)	N
West	90.0(3.9)	90.7(1.6)	89.4(1.6)	93.6(1.0)	N
TYPE OF COMMUNITY					
Extreme Rural	83.4(7.0)	90.6(2.4)	89.7(2.7)	92.7(1.6)	N
Disadvantaged Urban	89.4(3.3)	73.8(5.1)†	72.7(4.6)†	82.4(2.2)	LQ
Advantaged Urban	98.3(1.1)	95.4(1.4)*	96.0(1.5)	99.4(0.5)	Q
Other	93.0(1.5)	91.5(1.0)	89.9(1.4)	93.1(0.6)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	78.5(6.6)	86.4(6.0)	80.9(4.5)	85.0(2.5)	N
Graduated H.S.	88.9(3.2)	88.0(1.9)	86.9(1.9)	91.3(1.5)	N
Some Educ After H.S.	96.9(1.7)	93.3(3.7)	92.8(4.6)	92.4(2.3)	N
Graduated College	96.5(1.3)	92.4(1.2)	91.9(1.0)†	94.6(0.9)	Q
Unknown	94.0(1.2)	89.6(1.3)†	87.0(2.2)†	92.4(1.0)	Q
TYPE OF SCHOOL					
Public	92.0(1.3)	89.8(1.0)	88.1(1.2)*	92.0(0.6)	Q
Non-Public	96.5(1.7)	95.3(1.7)	96.4(2.1)	98.0(1.0)	N
QUARTILES					
Upper	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.1)	N
Middle Two	98.7(0.5)	97.2(0.6)*	96.9(0.8)	98.8(0.3)	Q
Lower	72.9(4.5)	67.6(2.5)	61.7(3.6)*	73.1(1.8)	Q

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 200

	1984	1988	1990	1992	TREND TESTS
TOTAL	54.4(2.0)	56.1(2.0)	52.7(1.7)	58.4(1.9)	N
SEX					
Male	50.1(4.1)	49.5(2.6)	46.3(2.2)	49.6(2.0)	N
Female	59.4(3.0)	62.9(2.7)	59.4(2.7)	67.4(2.4)	N
RACE/ETHNICITY					
White	62.2(2.1)	65.2(2.0)	61.8(2.3)	69.1(2.3)	N
Black	29.3(6.9)	24.7(4.4)	24.0(5.0)	23.6(3.4)	N
Hispanic	37.2(5.8)	40.6(4.3)	34.3(4.8)	37.6(4.1)	N
Other	58.3(10.1)	61.4(4.8)	52.2(7.1)	57.7(3.8)	N
MODAL AGE					
Less Than Modal Age	51.8(25.6)	70.0(12.3)*	74.2(29.7)	18.3(15.7)	Q
At Modal Age	62.8(3.3)	60.4(2.6)	56.1(2.6)	63.3(2.1)	N
Greater Than Modal Age	40.0(4.7)*	49.1(2.5)	47.4(2.1)	52.4(2.3)†	L
REGION					
Northeast	64.2(4.7)	54.3(4.4)	62.4(4.0)	67.1(4.2)	Q
Southeast	54.8(4.6)	51.2(3.9)	44.1(3.9)	43.7(2.9)	L
Central	50.0(3.4)*	61.1(3.7)	54.2(3.2)*	66.3(3.2)†	L
West	51.5(6.1)	58.3(3.8)	51.1(3.3)	56.7(2.8)	N
TYPE OF COMMUNITY					
Extreme Rural	41.9(11.6)	51.5(5.9)	53.6(5.0)	55.4(5.8)	N
Disadvantaged Urban	48.3(7.3)	27.1(7.0)	27.8(6.2)	33.3(4.4)	N
Advantaged Urban	72.1(6.6)	66.0(4.9)*	66.1(5.0)*	84.7(3.2)	Q
Other	53.3(2.7)	58.0(2.3)	54.1(2.0)	58.6(2.2)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	29.1(9.9)	43.7(6.5)	36.8(3.5)	41.2(5.0)	N
Graduated H.S.	41.4(4.0)	50.1(4.0)	48.3(4.1)	53.7(4.1)	L
Some Educ After H.S.	60.7(9.7)	63.3(7.2)	63.1(5.1)	52.4(4.8)	N
Graduated College	69.3(3.5)	62.7(1.9)	59.9(2.2)	65.2(1.5)	Q
Unknown	53.3(3.2)	51.9(3.2)	47.4(2.3)	55.8(3.9)	N
TYPE OF SCHOOL					
Public	52.4(2.5)	54.7(2.2)	51.4(1.6)	56.3(2.0)	N
Non-Public	66.4(7.3)	66.2(4.9)	66.6(5.3)	74.1(3.9)	N
QUARTILES					
Upper	94.8(1.6)	95.1(1.5)	92.9(1.5)	96.8(0.9)	N
Middle Two	56.7(2.5)	59.6(2.8)	54.6(1.9)	62.9(3.0)	N
Lower	9.0(2.1)	10.3(2.2)	8.6(2.6)	11.0(1.3)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 250

	1984	1988	1990	1992	TREND TESTS
TOTAL	10.1(1.0)	14.6(1.1)†	12.2(0.9)	13.0(1.1)	N
SEX					
Male	8.6(1.3)	10.9(1.3)	8.9(0.9)	8.1(1.1)	N
Female	11.9(2.6)	18.5(1.4)	15.6(1.4)	17.9(1.4)	N
RACE/ETHNICITY					
White	12.5(1.1)	18.5(1.5)†	15.5(1.3)	16.9(1.5)	L
Black	2.5(2.2)	2.5(1.1)	2.5(1.5)	1.0(0.7)	N
Hispanic	4.7(2.3)	6.5(1.5)	4.6(1.3)	4.3(1.2)	N
Other	10.9(5.2)	16.4(5.0)	12.0(3.8)	11.5(3.0)	N
MODAL AGE					
Less Than Modal Age	9.3(16.2)	26.8(13.9)	34.6(21.9)	0.0(21.9)	N
At Modal Age	12.8(2.0)	16.4(1.6)	13.6(1.5)	15.4(1.3)	N
Greater Than Modal Age	5.5(1.7)	11.5(1.1)†	9.9(1.2)	10.0(1.5)	LQ
REGION					
Northeast	12.4(3.9)	15.0(2.8)	16.7(1.9)	18.9(3.0)	N
Southeast	9.7(3.3)	11.9(1.5)*	9.3(1.4)	7.2(1.2)	N
Central	8.3(2.0)*	17.1(2.1)†	11.1(2.3)	16.0(2.4)†	L
West	10.7(2.9)	14.9(2.7)	12.0(1.3)	10.6(1.4)	N
TYPE OF COMMUNITY					
Extreme Rural	4.3(4.0)	12.1(2.3)	10.9(2.8)	9.1(3.0)	N
Disadvantaged Urban	10.5(3.6)	3.1(2.7)	3.8(2.0)	3.6(1.6)	N
Advantaged Urban	20.0(4.9)*	22.1(3.4)*	19.6(3.8)*	34.5(3.2)†	N
Other	8.7(1.0)	14.9(1.4)†	12.4(1.3)	11.9(1.3)	LQ
PARENTS' EDUCATION LEVEL					
Less Than H.S.	1.2(1.4)	8.1(4.4)	5.3(2.8)	5.6(3.2)	N
Graduated H.S.	4.2(2.4)	11.3(1.9)	8.4(2.5)	9.7(2.3)	N
Some Educ After H.S.	9.7(7.5)	16.9(6.1)	21.7(3.5)*	8.0(2.8)	N
Graduated College	19.2(2.7)	18.7(1.8)	15.8(1.1)	17.3(1.1)	N
Unknown	7.1(1.8)	11.8(1.9)	9.6(1.2)	11.1(1.8)	N
TYPE OF SCHOOL					
Public	9.2(1.1)	13.9(1.2)†	11.6(0.8)	12.0(1.2)	Q
Non-Public	16.0(3.9)	19.8(3.8)	18.0(4.7)	20.5(2.8)	N
QUARTILES					
Upper	34.5(3.7)	44.5(2.4)	38.2(2.7)	41.9(2.1)	N
Middle Two	3.0(1.0)	7.0(1.2)†	5.1(0.6)	5.0(1.3)	N
Lower	0.0(0.0)	0.1(0.2)	0.2(0.2)	0.0(0.1)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 300

	1984	1988	1990	1992	TREND TESTS
TOTAL	0.5(0.4)	0.8(0.2)	0.5(0.1)	0.5(0.2)	N
SEX					
Male	0.4(0.7)	0.4(0.2)	0.3(0.1)	0.2(0.1)	N
Female	0.5(0.3)	1.2(0.4)	0.8(0.2)	0.8(0.3)	N
RACE/ETHNICITY					
White	0.5(0.5)	1.1(0.3)	0.7(0.2)	0.6(0.2)	N
Black	0.0(0.0)	0.1(0.0)	0.1(0.2)	0.0(0.0)	N
Hispanic	0.5(0.9)	0.2(0.2)	0.2(0.2)	0.0(0.0)	N
Other	0.6(0.0)	0.6(1.5)	0.2(0.0)	0.4(0.0)	N
MODAL AGE					
Less Than Modal Age	0.0(0.0)	3.1(0.0)	1.9(0.0)	0.0(0.0)	N
At Modal Age	0.7(0.6)	0.9(0.3)	0.6(0.1)	0.7(0.3)	N
Greater Than Modal Age	0.1(0.0)	0.6(0.4)	0.4(0.2)	0.2(0.2)	N
REGION					
Northeast	0.4(0.0)	0.7(0.6)	0.8(0.3)	1.1(0.7)	N
Southeast	0.6(1.2)	0.8(0.3)	0.4(0.4)	0.1(0.0)	N
Central	0.4(0.5)	0.7(0.2)	0.4(0.3)	0.5(0.2)	N
West	0.4(0.0)	0.9(0.6)	0.5(0.3)	0.3(0.2)	N
TYPE OF COMMUNITY					
Extreme Rural	0.0(0.0)	0.7(0.5)	0.4(0.5)	0.1(0.0)	N
Disadvantaged Urban	0.2(0.0)	0.2(0.0)	0.0(0.0)	0.1(0.0)	N
Advantaged Urban	2.1(2.7)	1.5(0.9)	0.9(0.6)	2.7(1.3)	N
Other	0.2(0.3)	0.8(0.3)	0.5(0.2)	0.3(0.1)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	0.0(0.0)	0.6(0.6)	0.3(0.6)	0.1(0.6)	N
Graduated H.S.	0.0(0.0)	0.4(0.3)	0.4(0.3)	0.2(0.3)	N
Some Educ After H.S.	0.0(0.0)	2.4(1.9)	1.3(1.5)	0.3(1.5)	N
Graduated College	1.2(1.2)	1.1(0.3)	0.8(0.2)	0.8(0.3)	N
Unknown	0.2(0.0)	0.4(0.3)	0.2(0.2)	0.2(0.2)	N
TYPE OF SCHOOL					
Public	0.3(0.3)	0.8(0.2)	0.5(0.1)	0.5(0.1)	N
Non-Public	1.3(1.8)	1.0(0.7)	0.4(0.6)	0.6(0.6)	N
QUARTILES					
Upper	1.8(1.7)	3.0(0.7)	2.0(0.5)	1.9(0.7)	N
Middle Two	0.0(0.0)	0.1(0.1)	0.0(0.1)	0.0(0.1)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 350

	1984	1988	1990	1992	TREND TESTS
TOTAL	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
SEX					
Male	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Female	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
RACE/ETHNICITY					
White	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Black	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Hispanic	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
MODAL AGE					
Less Than Modal Age	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
At Modal Age	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Greater Than Modal Age	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
REGION					
Northeast	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	N
Southeast	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Central	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
West	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
TYPE OF COMMUNITY					
Extreme Rural	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Disadvantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Advantaged Urban	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Other	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated H.S.	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Some Educ After H.S.	0.0(0.0)	0.1(0.0)	0.0(0.0)	0.0(0.0)	N
Graduated College	0.0(0.0)	0.0(0.0)	0.0(0.1)	0.0(0.0)	N
Unknown	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
TYPE OF SCHOOL					
Public	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Non-Public	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
QUARTILES					
Upper	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.0(0.0)	N
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 150

	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	99.9(0.1)	99.8(0.1)†	99.9(0.1)	N
SEX					
Male	100.0(0.0)	99.9(0.1)	99.6(0.2)	99.9(0.2)	N
Female	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.0)	N
RACE/ETHNICITY					
White	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.0)	L
Black	100.0(0.0)	99.9(0.2)	99.3(0.5)	99.7(0.4)	N
Hispanic	100.0(0.0)	99.8(0.0)	99.6(0.5)	99.9(0.4)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
MODAL AGE					
Less Than Modal Age	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
At Modal Age	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.1)	N
Greater Than Modal Age	100.0(0.0)	99.9(0.1)	99.7(0.2)	99.9(0.1)	N
REGION					
Northeast	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.0)	N
Southeast	100.0(0.0)	99.9(0.2)	99.6(0.4)	99.9(0.3)	N
Central	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.0)	N
West	100.0(0.0)	99.9(0.0)	99.7(0.2)	99.9(0.2)	N
TYPE OF COMMUNITY					
Extreme Rural	100.0(0.0)	99.8(0.0)	99.5(0.6)	100.0(0.0)	N
Disadvantaged Urban	100.0(0.0)	99.9(0.0)	99.6(0.4)	99.7(0.5)	N
Advantaged Urban	100.0(0.0)	100.0(0.0)	99.9(0.0)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	99.8(0.1)	100.0(0.1)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	100.0(0.0)	100.0(0.0)	99.5(0.0)	99.8(0.0)	N
Graduated H.S.	100.0(0.0)	99.9(0.1)	99.7(0.2)	100.0(0.1)	N
Some Educ After H.S.	100.0(0.0)	100.0(0.0)	99.9(0.0)	100.0(0.0)	N
Graduated College	100.0(0.0)	100.0(0.0)	99.9(0.1)	100.0(0.1)	N
Unknown	100.0(0.0)	99.7(0.0)	99.4(0.6)	99.6(0.4)	N
TYPE OF SCHOOL					
Public	100.0(0.0)	99.9(0.1)	99.7(0.1)†	99.9(0.1)	N
Non-Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES					
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	100.0(0.0)	99.8(0.2)	99.1(0.3)†	99.8(0.3)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 200

	1984	1988	1990	1992	TREND TESTS
TOTAL	98.3(0.9)	97.2(0.6)	93.3(0.6)†*	97.7(0.4)	LQ
SEX					
Male	97.2(1.2)	95.4(1.0)	89.6(1.0)†*	96.3(0.7)	LQ
Female	99.5(0.7)	98.9(0.3)	97.0(0.7)†*	99.1(0.5)	Q
RACE/ETHNICITY					
White	99.3(0.4)	98.5(0.3)	95.6(0.6)†*	98.6(0.4)	LQ
Black	95.2(3.4)	92.2(2.2)	85.5(2.4)*	94.7(2.2)	N
Hispanic	92.9(6.1)	94.8(1.9)	89.3(2.2)	96.4(2.3)	N
Other	99.7(0.0)	98.7(0.9)	92.3(1.7)†*	98.6(1.1)	LQ
MODAL AGE					
Less Than Modal Age	90.7(13.3)	93.2(13.3)	100.0(13.3)	97.3(5.7)	N
At Modal Age	99.2(0.5)	98.6(0.3)	95.6(0.5)†*	98.7(0.4)	LQ
Greater Than Modal Age	96.9(1.6)	95.1(1.3)	89.7(1.3)†*	96.4(0.9)	Q
REGION					
Northeast	99.2(0.7)	97.9(0.7)	95.2(1.5)†	98.7(0.6)	Q
Southeast	97.9(1.9)	97.3(1.4)	90.5(1.6)†*	96.8(1.1)	N
Central	98.8(0.6)	95.8(1.0)†	94.6(1.8)	98.5(0.6)	Q
West	97.4(1.8)	97.6(0.7)	93.1(0.7)*	97.3(1.0)	N
TYPE OF COMMUNITY					
Extreme Rural	98.1(1.7)	97.9(1.3)	91.2(2.8)	97.3(1.3)	N
Disadvantaged Urban	95.2(4.3)	93.2(2.1)	89.6(2.8)	92.7(2.9)	N
Advantaged Urban	99.9(0.0)	98.8(0.6)	98.1(1.1)	99.4(1.0)	N
Other	98.4(0.8)	97.2(0.6)	93.2(0.6)†*	98.2(0.4)	LQ
PARENTS' EDUCATION LEVEL					
Less Than H.S.	96.3(3.2)	95.1(2.5)	90.8(2.7)	95.9(2.8)	N
Graduated H.S.	98.4(1.0)	96.1(1.0)	93.2(1.0)†*	97.7(0.6)	Q
Some Educ After H.S.	98.8(1.2)	98.8(0.8)	95.9(1.1)	98.6(1.0)	N
Graduated College	99.6(0.3)	98.6(0.5)	95.7(1.1)†*	98.9(0.5)	LQ
Unknown	94.4(3.1)	94.0(1.7)	83.3(2.7)†*	92.1(2.0)	N
TYPE OF SCHOOL					
Public	98.1(1.0)	96.9(0.6)	92.6(0.7)†*	97.6(0.5)	Q
Non-Public	99.8(0.6)	99.3(0.3)	97.9(0.9)	98.9(1.0)	N
QUARTILES					
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	99.8(0.2)	98.7(0.3)†*	99.9(0.2)	LQ
Lower	93.3(3.4)	89.0(2.3)	75.8(2.1)†*	91.1(1.8)	Q

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† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 250

	1984	1988	1990	1992	TREND TESTS
TOTAL	72.4(2.6)	67.1(1.7)*	57.0(1.5)†*	75.0(1.4)	Q
SEX					
Male	61.2(3.7)	55.5(2.1)*	45.0(2.2)†*	65.7(2.5)	Q
Female	83.9(2.6)	78.4(2.2)	69.3(1.6)†*	84.0(1.6)	Q
RACE/ETHNICITY					
White	78.9(2.6)	73.5(1.6)*	63.0(1.8)†*	79.7(1.5)	Q
Black	47.5(9.2)	45.3(5.0)	37.4(2.7)*	58.3(4.3)	N
Hispanic	46.6(8.7)	52.3(4.1)*	45.3(4.0)*	67.4(3.7)	N
Other	78.9(5.3)	73.1(4.5)	55.5(4.2)†*	75.4(5.9)	N
MODAL AGE					
Less Than Modal Age	41.9(16.9)	63.0(20.4)	93.8(5.9)†	86.7(9.0)	L
At Modal Age	79.2(2.5)	75.1(1.8)*	63.0(1.6)†*	82.0(1.5)	Q
Greater Than Modal Age	60.9(4.4)	55.4(2.2)*	47.4(2.2)†*	64.7(1.8)	Q
REGION					
Northeast	80.2(5.4)	68.5(3.9)*	62.2(2.9)†*	83.3(2.6)	Q
Southeast	72.2(4.5)	71.7(2.4)	52.2(3.1)†*	67.5(3.1)	N
Central	69.9(3.1)	60.6(3.3)*	59.8(4.1)*	78.4(2.2)	Q
West	68.1(4.0)	68.0(2.8)	54.8(3.4)†*	72.3(2.8)	Q
TYPE OF COMMUNITY					
Extreme Rural	65.2(8.1)	72.2(4.3)	53.2(7.5)	69.0(4.3)	N
Disadvantaged Urban	49.7(11.6)	44.1(5.4)	43.4(4.2)	51.7(4.9)	N
Advantaged Urban	91.4(4.0)	75.9(3.7)†*	78.9(3.9)	89.9(4.2)	Q
Other	72.4(2.5)	67.2(2.3)*	55.7(2.0)†*	76.3(1.2)	Q
PARENTS' EDUCATION LEVEL					
Less Than H.S.	61.8(6.6)	56.4(5.2)	45.1(3.7)	59.8(6.5)	N
Graduated H.S.	66.3(3.1)	60.2(3.0)	52.6(2.2)†*	69.7(2.7)	Q
Some Educ After H.S.	79.4(5.3)	79.4(3.1)	67.9(3.8)*	81.0(2.9)	N
Graduated College	84.9(1.9)	74.9(2.1)†*	66.0(2.7)†*	83.8(1.9)	LQ
Unknown	49.4(10.2)	49.6(4.3)	33.5(4.6)*	49.2(3.6)	N
TYPE OF SCHOOL					
Public	70.1(2.8)	65.3(1.9)*	54.0(1.4)†*	73.3(1.4)	Q
Non-Public	87.2(3.8)	80.4(3.1)	77.0(4.7)	86.2(2.5)	Q
QUARTILES					
Upper	99.6(0.4)	97.9(0.6)*	95.1(0.8)†*	99.5(0.2)	LQ
Middle Two	84.4(3.9)	74.6(1.9)*	60.3(1.8)†*	84.3(1.4)	Q
Lower	21.6(3.6)	21.2(2.6)*	12.5(1.8)*	31.6(2.5)	Q

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† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 300

	1984	1988	1990	1992	TREND TESTS
TOTAL	13.0(1.8)*	13.2(0.8)*	12.1(0.8)*	24.7(1.5)†	LQ
SEX					
Male	6.7(1.5)*	6.4(1.1)*	6.6(1.0)*	15.3(1.6)†	LQ
Female	19.5(3.6)*	19.7(1.3)*	17.8(1.3)*	33.9(1.9)†	LQ
RACE/ETHNICITY					
White	15.5(2.2)*	16.1(1.1)*	14.6(0.9)*	28.4(1.9)†	LQ
Black	2.6(1.7)*	3.8(1.1)*	4.0(1.1)*	13.4(2.3)†	LQ
Hispanic	4.1(2.3)*	5.5(1.5)*	7.3(1.5)*	15.8(2.4)†	LQ
Other	16.3(6.7)	15.5(3.7)	12.6(2.8)*	25.9(4.8)	N
MODAL AGE					
Less Than Modal Age	1.8(0.0)*	11.7(9.8)	57.2(16.7)†	41.4(15.5)†	L
At Modal Age	16.2(1.8)*	17.2(1.2)*	14.3(1.1)*	31.3(1.6)†	LQ
Greater Than Modal Age	7.6(2.8)	7.2(1.0)*	8.2(1.1)*	14.9(2.0)	Q
REGION					
Northeast	18.8(4.8)*	12.9(1.4)*	14.0(1.6)*	34.4(3.8)†	LQ
Southeast	13.6(3.0)	17.2(2.1)	10.3(1.5)*	18.2(2.6)	N
Central	9.6(2.3)*	10.2(1.4)*	13.1(2.4)*	26.4(2.5)†	LQ
West	10.8(2.9)*	12.6(1.8)*	11.5(1.9)*	21.8(2.6)†	LQ
TYPE OF COMMUNITY					
Extreme Rural	5.9(3.1)	16.3(2.8)†	9.6(2.9)	17.6(4.5)	N
Disadvantaged Urban	3.4(3.3)	4.2(2.2)	5.5(2.1)	9.1(2.4)	N
Advantaged Urban	31.3(7.8)	16.8(3.5)*	29.5(3.5)	44.6(5.5)	Q
Other	11.6(2.6)*	13.1(0.9)*	10.5(1.1)*	24.4(2.8)†	LQ
PARENTS' EDUCATION LEVEL					
Less Than H.S.	7.9(2.8)	6.8(1.7)	5.4(1.8)	10.1(4.2)	N
Graduated H.S.	7.2(1.3)*	8.5(1.2)*	8.7(1.1)*	18.8(1.9)†	LQ
Some Educ After H.S.	13.6(4.0)*	21.6(3.1)	18.1(3.1)	26.9(3.2)†	L
Graduated College	21.6(3.3)*	17.4(1.9)*	16.7(1.3)*	33.4(2.2)†	LQ
Unknown	4.5(2.1)	4.9(1.9)	4.2(1.2)	7.5(2.6)	N
TYPE OF SCHOOL					
Public	10.8(2.1)*	12.0(1.0)*	10.0(0.9)*	22.8(1.9)†	LQ
Non-Public	27.2(7.6)	21.7(4.1)*	26.6(3.7)	37.2(3.7)	Q
QUARTILES					
Upper	43.7(3.9)*	42.4(2.3)*	40.0(1.4)*	65.9(2.2)†	LQ
Middle Two	4.1(1.7)*	5.1(0.8)*	4.3(0.8)*	16.1(1.9)†	LQ
Lower	0.0(0.0)	0.1(0.1)	0.1(0.1)	0.8(0.6)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 350

	1984	1988	1990	1992	TREND TESTS
TOTAL	0.1(0.1)*	0.2(0.1)*	0.6(0.2)†*	1.6(0.3)†	LQ
SEX					
Male	0.0(0.0)*	0.1(0.1)	0.2(0.2)	0.5(0.2)†	L
Female	0.2(0.3)*	0.4(0.2)*	1.1(0.3)*	2.7(0.6)†	LQ
RACE/ETHNICITY					
White	0.1(0.2)*	0.3(0.2)*	0.8(0.2)†*	1.9(0.4)†	LQ
Black	0.0(0.0)	0.0(0.0)	0.1(0.1)	0.6(0.7)	N
Hispanic	0.0(0.0)	0.0(0.0)	0.1(0.0)	0.9(0.7)	N
Other	0.0(0.0)	0.5(0.9)	0.7(1.0)	1.8(1.2)	N
MODAL AGE					
Less Than Modal Age	0.0(0.0)	0.4(2.5)	5.6(8.3)	2.3(0.0)	N
At Modal Age	0.1(0.2)*	0.3(0.2)*	0.8(0.2)*	2.2(0.5)†	LQ
Greater Than Modal Age	0.0(0.0)	0.1(0.1)	0.3(0.2)	0.7(0.4)	L
REGION					
Northeast	0.1(0.2)*	0.3(0.3)*	1.0(0.5)	3.1(0.7)†	LQ
Southeast	0.2(0.5)	0.3(0.3)	0.5(0.3)	0.8(0.4)	N
Central	0.0(0.0)*	0.1(0.1)	0.6(0.4)	1.6(0.7)†	L
West	0.0(0.0)	0.2(0.3)	0.4(0.3)	1.2(0.7)	L
TYPE OF COMMUNITY					
Extreme Rural	0.0(0.0)	0.3(0.9)	0.4(0.3)	0.6(0.5)	N
Disadvantaged Urban	0.0(0.0)	0.0(0.0)	0.1(0.2)	0.1(0.3)	N
Advantaged Urban	0.4(1.1)	0.3(0.4)	2.4(1.0)	4.0(1.7)	L
Other	0.0(0.1)*	0.2(0.1)*	0.4(0.1)†*	1.6(0.4)†	LQ
PARENTS' EDUCATION LEVEL					
Less Than H.S.	0.0(0.0)	0.1(0.0)	0.1(0.4)	0.2(0.4)	N
Graduated H.S.	0.0(0.0)	0.0(0.0)	0.3(0.2)	0.6(0.3)	N
Some Educ After H.S.	0.1(0.0)	0.4(0.4)	1.2(0.6)	2.1(0.9)	L
Graduated College	0.2(0.4)*	0.4(0.2)*	0.9(0.4)	2.7(0.7)†	LQ
Unknown	0.0(0.0)	0.1(0.4)	0.2(0.2)	0.0(0.0)	N
TYPE OF SCHOOL					
Public	0.0(0.1)*	0.2(0.1)*	0.5(0.2)*	1.4(0.4)†	LQ
Non-Public	0.4(0.5)	0.6(0.5)	1.7(0.7)	3.0(1.3)	L
QUARTILES					
Upper	0.3(0.5)*	0.9(0.5)*	2.5(0.6)†*	6.3(1.0)†	LQ
Middle Two	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.1(0.2)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.

† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.

L Trend tests for linear terms were significant.

Q Trend tests for quadratic terms were significant.

N Trend tests for linear and quadratic terms were not significant.

The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 150

	1984	1988	1990	1992	TREND TESTS
TOTAL	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	N
SEX					
Male	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.1)	N
Female	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
RACE/ETHNICITY					
White	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Black	99.9(0.0)	100.0(0.0)	99.9(0.3)	99.8(0.3)	N
Hispanic	100.0(0.0)	99.9(0.0)	100.0(0.0)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
MODAL AGE					
Less Than Modal Age	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
At Modal Age	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Greater Than Modal Age	100.0(0.0)	100.0(0.0)	99.9(0.2)	99.9(0.2)	N
REGION					
Northeast	100.0(0.0)	100.0(0.0)	100.0(0.2)	100.0(0.0)	N
Southeast	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Central	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	N
West	100.0(0.0)	100.0(0.0)	100.0(0.0)	99.9(0.1)	N
TYPE OF COMMUNITY					
Extreme Rural	100.0(0.0)	100.0(0.0)	99.9(0.0)	100.0(0.0)	N
Disadvantaged Urban	100.0(0.0)	99.6(0.0)	99.9(0.6)	99.8(0.3)	N
Advantaged Urban	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Other	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	100.0(0.0)	100.0(0.0)	99.9(0.4)	100.0(0.4)	N
Graduated H.S.	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Some Educ After H.S.	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Graduated College	100.0(0.0)	100.0(0.0)	100.0(0.1)	99.9(0.1)	N
Unknown	99.7(0.0)	99.8(0.0)	100.0(0.0)	100.0(0.0)	N
TYPE OF SCHOOL					
Public	100.0(0.0)	100.0(0.0)	100.0(0.1)	100.0(0.0)	N
Non-Public	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
QUARTILES					
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	100.0(0.0)	100.0(0.0)	99.9(0.2)	99.9(0.2)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
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NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 200

	1984	1988	1990	1992	TREND TESTS
TOTAL	99.5(0.3)	99.7(0.3)	99.1(0.3)	99.5(0.2)	N
SEX					
Male	99.2(0.4)	99.6(0.6)	98.4(0.6)	99.2(0.4)	N
Female	99.7(0.2)	99.8(0.1)	99.8(0.2)	99.9(0.1)	N
RACE/ETHNICITY					
White	99.9(0.0)	99.8(0.3)	99.5(0.3)	99.8(0.1)	L
Black	98.8(1.0)	99.7(0.5)	97.8(0.8)	98.4(0.8)	N
Hispanic	96.8(1.8)	99.0(0.9)	98.4(1.6)	98.8(1.3)	N
Other	98.8(1.8)	99.8(0.0)	98.3(1.6)	99.3(0.0)	N
MODAL AGE					
Less Than Modal Age	99.9(0.3)	100.0(0.0)	99.6(0.6)	99.9(0.0)	N
At Modal Age	99.9(0.0)	99.9(0.1)	99.5(0.2)	99.8(0.2)	N
Greater Than Modal Age	97.8(0.9)	99.0(1.4)	97.6(0.9)	98.7(0.6)	N
REGION					
Northeast	99.2(0.8)	99.9(0.0)	99.5(0.4)	99.5(0.3)	N
Southeast	99.7(0.4)	99.8(0.2)	98.5(0.7)	99.4(0.5)	N
Central	99.8(0.3)	99.5(1.1)	99.2(0.6)	99.8(0.0)	N
West	99.3(0.5)	99.9(0.1)	99.1(0.6)	99.3(0.6)	N
TYPE OF COMMUNITY					
Extreme Rural	100.0(0.0)	99.6(1.4)	98.5(1.3)	99.8(0.3)	N
Disadvantaged Urban	97.4(1.7)	96.0(4.5)	98.3(1.5)	98.6(1.0)	N
Advantaged Urban	99.9(0.6)	100.0(0.0)	99.4(0.5)	100.0(0.0)	N
Other	99.7(0.2)	99.8(0.3)	99.2(0.3)	99.5(0.3)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	99.0(0.8)	99.3(1.6)	97.9(2.1)	99.4(0.0)	N
Graduated H.S.	99.4(0.5)	99.7(0.4)	98.3(0.7)	99.4(0.3)	N
Some Educ After H.S.	99.9(0.0)	99.8(0.6)	99.7(0.2)	99.6(0.2)	N
Graduated College	99.9(0.0)	100.0(0.0)	99.7(0.3)	99.8(0.2)	N
Unknown	94.8(3.2)	97.9(1.5)	96.6(2.4)	95.4(4.6)	N
TYPE OF SCHOOL					
Public	99.4(0.3)	99.7(0.3)	99.0(0.4)	99.5(0.2)	N
Non-Public	100.0(0.0)	100.0(0.0)	99.9(0.3)	99.7(0.5)	N
QUARTILES					
Upper	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Middle Two	100.0(0.0)	100.0(0.0)	100.0(0.0)	100.0(0.0)	N
Lower	98.0(1.0)	99.0(1.1)	96.3(1.4)	98.0(0.9)	N

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† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 250

	1984	1988	1990	1992	TREND TESTS
TOTAL	89.4(1.0)	92.7(1.5)*	84.3(1.3)†	87.4(1.3)	L
SEX					
Male	84.2(1.6)	88.8(2.3)	77.4(1.9)†	82.6(1.8)	N
Female	94.7(1.1)	96.1(1.3)	91.4(1.4)	92.9(1.2)	N
RACE/ETHNICITY					
White	94.8(1.3)	95.7(1.4)	88.6(1.4)†*	92.6(0.8)	L
Black	76.4(5.2)	83.4(4.0)	69.5(3.6)	68.3(5.7)	N
Hispanic	62.3(9.2)	81.3(5.1)	76.8(3.6)	77.1(5.5)	N
Other	90.2(4.3)	94.4(2.8)	81.0(5.2)	88.5(3.5)	N
MODAL AGE					
Less Than Modal Age	93.0(1.8)	97.3(1.0)	91.0(3.2)	91.3(2.5)	N
At Modal Age	93.8(0.9)	96.7(0.6)†*	88.5(1.6)†	92.5(1.1)	L
Greater Than Modal Age	71.8(3.8)	77.4(6.4)	70.4(2.3)	73.5(3.8)	N
REGION					
Northeast	90.2(2.5)	94.9(2.1)	88.9(1.8)	89.3(1.9)	N
Southeast	88.7(2.9)	92.1(1.6)*	78.7(2.5)†	79.9(3.4)	L
Central	91.0(2.2)	92.2(2.6)	85.2(2.2)	91.0(1.8)	N
West	87.3(2.0)	91.7(2.2)	84.4(2.3)	89.0(1.9)	N
TYPE OF COMMUNITY					
Extreme Rural	91.3(3.6)	92.8(3.6)	82.1(3.1)	89.0(2.5)	N
Disadvantaged Urban	71.4(3.5)	60.3(13.4)	75.3(4.4)	73.5(3.7)	N
Advantaged Urban	97.6(1.1)	96.3(1.3)	90.0(3.5)	92.6(2.0)	L
Other	90.3(1.4)	92.3(1.7)	84.9(1.3)†	88.9(1.5)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	79.6(4.9)	81.4(5.4)	69.8(4.9)	74.7(5.6)	N
Graduated H.S.	86.1(3.6)	90.6(2.4)	78.8(2.6)	82.3(2.6)	N
Some Educ After H.S.	94.6(1.9)	95.3(2.0)	88.7(1.8)	91.5(2.1)	N
Graduated College	95.6(1.5)	96.6(1.6)	91.1(1.2)	92.7(1.5)	L
Unknown	63.5(9.7)	76.5(8.1)	60.9(7.4)	64.4(7.7)	N
TYPE OF SCHOOL					
Public	88.5(1.1)	92.0(1.6)*	83.4(1.3)†	86.8(1.4)	L
Non-Public	97.0(1.3)	96.7(2.1)	93.6(3.2)	93.4(2.7)	N
QUARTILES					
Upper	99.9(0.2)	100.0(0.0)	99.9(0.0)	99.9(0.0)	N
Middle Two	98.1(0.6)	99.3(0.5)*	93.1(1.1)†	96.3(0.8)	L
Lower	61.4(3.5)	72.0(5.6)	51.1(3.3)	57.1(4.0)	N

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† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 300

	1984	1988	1990	1992	TREND TESTS
TOTAL	38.6(2.4)	39.2(1.7)	36.7(1.1)	35.8(1.9)	N
SEX					
Male	27.9(1.9)	25.8(2.3)	25.9(1.7)	26.2(1.9)	N
Female	49.5(3.8)	51.0(2.4)	47.9(2.1)	46.7(2.5)	N
RACE/ETHNICITY					
White	46.3(2.9)	45.6(2.0)	42.5(1.4)	43.3(2.2)	N
Black	16.3(4.4)	16.8(2.8)	18.0(2.4)	9.9(2.7)	N
Hispanic	7.8(4.3)	19.6(6.3)	25.6(3.1)†	19.7(4.3)	L
Other	34.7(7.8)	44.2(5.9)	32.0(5.8)	35.8(4.4)	N
MODAL AGE					
Less Than Modal Age	42.8(6.9)	50.4(4.4)	44.1(5.4)	44.7(5.9)	N
At Modal Age	44.9(2.4)	45.8(2.0)	41.9(1.2)	42.5(2.9)	N
Greater Than Modal Age	14.0(3.1)	12.1(3.3)	20.2(2.0)	16.0(2.1)	N
REGION					
Northeast	40.2(4.3)	44.1(3.6)	45.9(2.6)	39.2(3.0)	N
Southeast	33.8(5.8)	35.7(5.0)	30.2(3.0)	25.5(4.4)	N
Central	40.8(3.6)	40.9(4.9)	38.5(3.1)	39.8(3.0)	N
West	38.6(4.3)	36.3(3.3)	33.3(1.9)	38.2(2.8)	N
TYPE OF COMMUNITY					
Extreme Rural	34.5(7.6)	41.2(3.6)	36.8(3.0)	36.3(5.4)	N
Disadvantaged Urban	15.2(6.7)	7.4(4.2)	21.3(3.4)	18.0(3.9)	N
Advantaged Urban	58.9(3.8)	42.8(3.9)†	45.1(6.6)	47.4(5.8)	N
Other	38.1(3.3)	38.7(1.8)	37.4(1.3)	37.3(1.9)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	18.1(7.2)	20.9(4.5)	18.3(3.2)	17.1(3.5)	N
Graduated H.S.	30.8(3.3)	28.8(2.5)	27.5(2.5)	24.4(2.5)	N
Some Educ After H.S.	47.9(5.7)	45.3(4.9)	41.0(3.3)	40.7(3.3)	N
Graduated College	50.6(3.9)	50.0(3.6)	47.5(2.6)	46.1(2.3)	N
Unknown	15.9(6.2)	9.9(4.5)	9.2(4.1)	9.1(5.7)	N
TYPE OF SCHOOL					
Public	36.1(2.4)	37.3(1.5)	35.0(0.9)	34.8(2.1)	N
Non-Public	59.2(6.3)	50.7(5.9)	56.4(7.5)	45.9(6.0)	N
QUARTILES					
Upper	86.3(2.4)	88.3(1.8)	83.6(2.5)	82.3(3.3)	N
Middle Two	33.2(3.5)	33.6(2.4)	30.6(1.2)	29.9(2.0)	N
Lower	1.7(1.1)	1.4(0.5)	2.2(0.7)	1.6(0.7)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Weighted proficiency means, percentage of subgroup members, and percentage at or above anchor points

Weighted percentage with proficiency at or above anchor point 350

	1984	1988	1990	1992	TREND TESTS
TOTAL	2.1(0.7)	1.1(0.4)	4.1(0.7)*	1.9(0.4)	N
SEX					
Male	1.1(0.4)	0.3(0.3)	1.7(0.4)	0.7(0.2)	N
Female	3.2(1.5)	1.7(0.6)	6.5(1.4)	3.1(0.8)	N
RACE/ETHNICITY					
White	2.7(0.9)	1.3(0.5)	5.0(0.8)*	2.4(0.5)	N
Black	0.3(0.0)	0.1(0.0)	0.9(0.4)	0.1(0.0)	N
Hispanic	0.0(0.0)	0.2(0.3)	2.7(1.5)	0.3(0.7)	N
Other	2.3(1.8)	1.2(0.8)	3.5(1.9)	2.7(1.5)	N
MODAL AGE					
Less Than Modal Age	2.9(2.5)	2.0(1.2)	6.6(2.7)	3.3(1.3)	N
At Modal Age	2.6(0.9)	1.2(0.4)	4.7(0.7)*	2.3(0.7)	N
Greater Than Modal Age	0.1(0.4)	0.1(0.0)	1.3(0.5)	0.3(0.4)	N
REGION					
Northeast	2.2(1.3)	1.4(0.6)	6.6(1.8)*	1.7(0.7)	N
Southeast	2.1(1.4)	0.8(0.7)	2.7(1.1)	1.0(0.8)	N
Central	2.1(1.2)	1.1(0.9)	4.1(1.0)	2.3(0.7)	N
West	2.2(1.8)	0.9(0.3)	3.2(0.7)	2.3(0.6)	N
TYPE OF COMMUNITY					
Extreme Rural	0.5(0.9)	0.3(0.0)	4.1(1.1)†	1.4(1.3)	N
Disadvantaged Urban	0.2(0.0)	0.0(0.0)	1.6(0.9)	0.5(0.3)	N
Advantaged Urban	5.3(1.9)	1.2(0.8)	6.0(2.5)	3.6(1.5)	N
Other	1.9(1.0)	1.1(0.6)	4.1(0.8)	1.9(0.4)	N
PARENTS' EDUCATION LEVEL					
Less Than H.S.	0.4(0.7)	0.2(0.7)	0.2(0.0)	0.5(0.6)	N
Graduated H.S.	0.9(0.9)	0.3(0.2)	1.9(0.5)	0.6(0.3)	N
Some Educ After H.S.	3.2(1.0)	1.0(0.8)	4.6(1.4)	2.7(1.0)	N
Graduated College	3.6(1.3)	1.9(0.6)	6.5(1.4)*	2.6(0.7)	N
Unknown	0.5(0.0)	0.0(0.0)	0.6(0.9)	0.3(0.0)	N
TYPE OF SCHOOL					
Public	1.9(0.7)	0.9(0.2)	3.5(0.6)	1.9(0.5)	N
Non-Public	4.5(2.7)	2.1(1.4)	10.7(3.0)*	1.9(1.1)	N
QUARTILES					
Upper	8.4(2.7)	4.2(1.5)	15.5(2.6)*	7.1(1.6)	N
Middle Two	0.1(0.2)	0.0(0.0)	0.4(0.2)	0.2(0.0)	N
Lower	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	N

* Statistically significant difference from 1992, where alpha equals .05 per set of comparisons.
† Statistically significant difference from 1984, where alpha equals .05 per set of comparisons.
L Trend tests for linear terms were significant.
Q Trend tests for quadratic terms were significant.
N Trend tests for linear and quadratic terms were not significant.
The standard errors of the estimated percentages appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 4

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors

	1984	1988	1990	1992
TOTAL SAMPLE				
Mean	203.8(1.5)	205.7(1.6)	201.7(1.5)	207.1(1.5)
St. Dev.	36.5(1.4)	42.0(0.8)	41.7(0.8)	38.2(0.6)
Percentiles				
5	143.5(3.3)	135.4(3.3)	130.8(1.8)	142.2(1.9)
10	156.8(2.7)	151.3(1.9)	147.2(2.3)	157.3(1.3)
25	179.2(2.1)	177.0(1.6)	174.2(2.1)	181.9(1.4)
50	204.2(2.9)	207.0(2.5)	202.9(1.7)	208.1(2.2)
75	228.7(1.5)	235.0(1.8)	230.8(2.3)	233.2(1.6)
90	250.5(2.2)	259.1(2.1)	254.6(2.1)	255.8(1.8)
95	262.9(2.7)	273.7(2.6)	268.3(2.7)	268.8(2.9)
MALE STUDENTS				
Mean	200.5(2.8)	199.0(2.3)	195.0(1.9)	198.3(1.7)
St. Dev.	36.4(1.6)	41.5(1.0)	41.6(1.1)	37.4(0.8)
Percentiles				
5	140.8(7.2)	129.1(4.3)	124.6(4.0)	135.0(2.3)
10	153.7(4.3)	145.5(3.2)	140.4(3.1)	149.4(2.2)
25	176.7(2.9)	170.7(2.5)	167.8(2.8)	173.7(1.8)
50	200.0(3.1)	199.2(3.8)	195.9(1.9)	199.6(1.9)
75	225.5(3.1)	228.0(2.9)	223.8(1.6)	223.5(2.3)
90	246.3(2.8)	251.5(2.7)	247.7(1.9)	245.6(3.0)
95	260.2(3.4)	265.7(3.5)	262.2(2.5)	258.0(3.0)
FEMALE STUDENTS				
Mean	207.6(3.1)	212.6(2.0)	208.7(2.2)	216.1(1.7)
St. Dev.	36.2(2.3)	41.4(1.2)	40.6(1.1)	36.9(0.9)
Percentiles				
5	146.7(6.1)	143.3(2.2)	139.8(3.6)	153.0(3.1)
10	161.1(5.5)	158.2(3.4)	155.4(3.6)	167.6(1.5)
25	183.5(3.4)	184.9(4.5)	181.8(2.7)	191.7(2.5)
50	208.7(3.0)	213.5(2.5)	209.8(2.9)	217.7(1.7)
75	232.3(3.4)	241.3(1.9)	237.0(2.7)	241.6(1.5)
90	253.7(7.0)	265.4(3.8)	260.2(2.0)	262.9(1.9)
95	265.1(5.5)	279.7(2.5)	273.1(2.7)	275.4(2.9)
WHITE STUDENTS				
Mean	210.7(1.9)	214.9(1.9)	211.0(2.0)	216.7(1.7)
St. Dev.	34.1(1.1)	38.7(1.2)	38.2(0.8)	34.7(0.7)
Percentiles				
5	154.9(3.6)	151.0(4.3)	146.4(3.0)	159.0(2.3)
10	166.6(3.3)	164.6(3.1)	161.6(3.5)	172.1(1.7)
25	187.6(1.5)	188.5(1.8)	185.6(2.9)	193.9(1.9)
50	211.1(2.2)	215.5(1.8)	211.4(1.9)	217.3(2.3)
75	233.2(1.4)	241.6(2.1)	237.3(2.2)	240.4(1.6)
90	255.0(4.5)	264.6(2.6)	260.0(1.6)	260.8(2.2)
95	266.1(3.5)	278.4(3.3)	272.5(2.4)	273.1(2.8)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 4

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors (continued)

	1984	1988	1990	1992
BLACK STUDENTS				
Mean	181.6(5.0)	173.3(4.7)	171.4(5.4)	175.0(3.8)
St. Dev.	34.8(3.3)	39.4(2.3)	40.3(1.6)	33.9(1.6)
Percentiles				
5	123.9(6.5)	108.9(7.6)	104.8(5.2)	117.2(5.7)
10	134.9(4.5)	122.3(5.9)	119.5(6.8)	130.5(4.2)
25	159.5(4.9)	147.7(5.5)	144.0(4.9)	152.5(4.5)
50	181.5(5.5)	172.6(4.6)	172.0(6.0)	175.7(4.2)
75	205.2(13.6)	199.7(4.6)	198.5(7.0)	198.2(3.3)
90	227.9(10.2)	224.4(6.0)	222.7(6.5)	217.9(3.6)
95	239.6(12.0)	237.5(5.8)	239.0(23.2)	229.2(6.4)
HISPANIC STUDENTS				
Mean	188.5(5.8)	190.3(3.5)	184.1(4.1)	189.4(3.6)
St. Dev.	37.1(5.3)	39.6(1.7)	38.8(1.9)	35.3(1.6)
Percentiles				
5	130.0(13.1)	125.3(6.0)	120.3(7.5)	132.5(5.1)
10	141.2(12.3)	139.4(6.1)	134.8(7.6)	143.7(5.1)
25	161.9(8.7)	163.2(5.1)	158.7(7.1)	166.4(3.4)
50	188.2(6.4)	190.8(5.1)	183.7(5.4)	188.8(4.3)
75	214.2(8.0)	217.5(4.5)	210.1(3.8)	213.2(5.1)
90	234.5(6.5)	240.7(4.3)	234.2(4.8)	234.5(5.5)
95	247.3(7.5)	256.5(4.8)	247.8(5.8)	247.3(3.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 8

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors

	1984	1988	1990	1992
TOTAL SAMPLE				
Mean	266.7(2.0)	263.7(1.3)	256.6(1.2)	274.4(1.3)
St. Dev.	29.5(1.4)	32.4(0.6)	37.5(0.7)	36.3(0.9)
Percentiles				
5	215.7(4.3)	208.6(2.9)	194.6(2.3)	213.7(2.0)
10	227.0(3.7)	221.9(2.6)	207.9(1.9)	227.2(2.9)
25	247.3(3.1)	242.5(1.9)	231.4(1.4)	249.9(1.5)
50	268.3(2.6)	264.1(1.4)	256.7(1.6)	275.0(1.6)
75	287.5(2.1)	285.7(1.2)	281.9(1.7)	299.7(1.7)
90	303.7(1.8)	305.0(1.4)	304.4(1.3)	320.4(1.7)
95	312.9(2.0)	315.7(1.8)	318.4(1.8)	332.4(1.6)
MALE STUDENTS				
Mean	257.5(2.3)	253.7(1.5)	245.6(1.5)	263.6(1.9)
St. Dev.	28.9(1.7)	31.3(0.9)	36.1(1.0)	34.8(1.0)
Percentiles				
5	208.0(4.4)	201.0(3.7)	187.0(1.7)	205.8(3.3)
10	219.7(4.1)	213.0(2.5)	199.3(1.8)	218.7(2.2)
25	237.8(5.7)	233.1(1.6)	220.7(2.2)	240.3(2.6)
50	258.6(3.2)	254.4(1.4)	245.6(1.6)	263.7(2.3)
75	278.0(2.7)	275.0(1.3)	270.0(1.8)	288.2(2.1)
90	293.9(3.0)	293.6(2.1)	291.9(2.8)	307.9(1.8)
95	302.9(2.4)	304.0(3.5)	304.9(2.5)	319.5(2.3)
FEMALE STUDENTS				
Mean	276.2(2.4)	273.5(1.7)	267.9(1.3)	285.0(1.3)
St. Dev.	27.0(1.4)	30.5(0.6)	35.4(1.1)	34.6(1.0)
Percentiles				
5	229.3(4.9)	222.6(3.3)	210.1(2.6)	227.0(4.1)
10	241.5(4.4)	234.3(1.5)	223.1(2.3)	239.9(3.2)
25	258.7(2.7)	253.3(2.4)	244.2(1.5)	261.7(1.6)
50	277.1(3.5)	274.1(2.3)	267.8(1.2)	285.7(2.5)
75	295.7(3.0)	294.4(1.5)	291.7(1.7)	308.9(1.5)
90	309.7(2.4)	312.3(1.2)	313.6(1.8)	328.9(1.3)
95	317.6(3.5)	322.5(2.0)	327.3(2.2)	340.1(3.0)
WHITE STUDENTS				
Mean	271.7(2.1)	269.1(1.3)	262.1(1.6)	279.2(1.3)
St. Dev.	27.5(1.1)	31.1(0.6)	36.4(0.7)	35.1(0.8)
Percentiles				
5	224.4(5.7)	216.5(2.3)	202.1(2.3)	220.4(3.4)
10	235.1(3.2)	229.0(1.4)	215.3(2.9)	234.0(2.6)
25	253.4(2.3)	248.5(1.8)	237.3(1.9)	255.5(1.7)
50	272.7(2.7)	269.9(1.5)	262.5(1.6)	280.1(1.7)
75	291.0(2.3)	290.5(1.3)	286.9(1.8)	303.5(1.9)
90	306.3(2.0)	308.7(1.7)	308.5(1.8)	323.7(2.4)
95	315.0(2.5)	319.1(1.3)	322.5(1.8)	335.4(2.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 8

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors (continued)

	1984	1988	1990	1992
BLACK STUDENTS				
Mean	247.1(5.7)	246.0(3.5)	239.0(2.3)	258.1(4.0)
St. Dev.	27.4(1.7)	31.0(1.1)	35.6(1.9)	36.5(2.2)
Percentiles				
5	200.8(7.2)	193.6(5.2)	181.6(5.7)	200.1(8.1)
10	212.1(6.8)	205.2(6.1)	192.9(4.0)	212.5(7.4)
25	228.5(6.9)	226.0(3.4)	215.6(4.4)	232.2(4.7)
50	247.6(6.7)	246.6(4.3)	239.8(2.4)	257.0(3.6)
75	265.3(3.7)	266.3(3.3)	263.3(2.7)	282.1(4.6)
90	281.3(5.4)	285.2(5.7)	284.5(1.6)	306.3(3.3)
95	291.5(3.6)	295.7(4.4)	297.2(3.1)	318.9(4.7)
HISPANIC STUDENTS				
Mean	246.9(6.4)	250.4(2.5)	245.7(2.8)	265.0(2.2)
St. Dev.	30.2(2.9)	31.0(1.6)	36.1(1.7)	35.3(2.5)
Percentiles				
5	197.2(13.9)	199.2(5.9)	186.7(5.4)	203.4(6.4)
10	206.6(11.7)	209.8(7.1)	198.8(3.7)	218.7(5.1)
25	225.0(7.6)	230.5(5.3)	220.5(3.6)	242.0(5.0)
50	247.2(7.0)	251.2(2.9)	246.5(4.7)	265.1(2.1)
75	268.4(4.2)	270.9(2.4)	269.7(5.0)	288.2(4.3)
90	286.1(5.8)	289.5(2.4)	292.3(3.3)	310.2(3.3)
95	298.1(7.7)	300.6(5.4)	304.6(3.3)	323.8(3.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 11

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors

	1984	1988	1990	1992
TOTAL SAMPLE				
Mean	289.7(1.6)	291.3(1.3)	287.1(1.0)	287.3(1.4)
St. Dev.	31.8(0.6)	27.9(1.1)	36.5(1.1)	32.0(0.7)
Percentiles				
5	235.7(2.3)	244.4(4.5)	226.7(2.7)	233.2(3.3)
10	248.9(1.7)	255.2(2.4)	240.3(2.4)	245.7(2.1)
25	268.9(1.7)	273.1(1.9)	262.3(1.8)	266.1(1.7)
50	290.9(1.9)	292.4(1.3)	287.7(1.3)	288.2(1.2)
75	312.1(1.7)	310.6(1.2)	311.9(1.4)	309.7(1.7)
90	329.5(2.6)	326.3(1.4)	334.0(1.8)	327.6(1.5)
95	340.0(2.9)	334.8(1.6)	346.6(2.7)	338.1(2.3)
MALE STUDENTS				
Mean	281.1(1.4)	282.2(2.0)	276.4(1.6)	279.4(1.2)
St. Dev.	31.5(0.8)	26.8(1.0)	35.2(0.8)	31.2(1.1)
Percentiles				
5	227.2(3.5)	236.7(4.2)	218.2(2.8)	226.9(3.2)
10	240.7(2.4)	248.2(3.5)	231.3(2.6)	239.0(2.0)
25	260.3(1.4)	264.9(2.4)	252.8(2.0)	258.6(1.7)
50	281.5(1.9)	282.9(2.0)	276.2(1.8)	280.5(1.2)
75	303.0(2.0)	300.6(1.7)	300.9(1.6)	301.3(1.7)
90	320.8(3.2)	316.0(1.9)	321.4(1.6)	318.5(1.6)
95	331.4(2.6)	324.5(2.6)	333.1(1.8)	328.6(2.2)
FEMALE STUDENTS				
Mean	298.6(2.5)	299.3(1.2)	298.2(1.5)	296.4(2.0)
St. Dev.	29.5(1.1)	26.4(1.3)	34.4(1.6)	30.4(0.6)
Percentiles				
5	249.1(4.4)	254.2(3.8)	241.2(4.0)	244.0(1.9)
10	261.4(4.0)	265.4(2.7)	253.0(3.0)	256.6(3.1)
25	279.3(3.1)	282.0(1.8)	274.9(1.6)	276.1(2.2)
50	299.5(2.8)	300.7(1.7)	298.4(1.6)	297.4(2.3)
75	318.9(2.8)	317.8(1.8)	321.8(1.5)	317.6(2.1)
90	335.0(4.1)	331.7(1.7)	342.6(2.6)	334.9(1.8)
95	344.8(4.9)	340.5(1.7)	354.3(4.1)	344.3(2.8)
WHITE STUDENTS				
Mean	296.8(1.8)	296.2(1.3)	292.8(1.2)	294.1(1.2)
St. Dev.	28.5(1.0)	26.2(1.2)	35.2(1.2)	29.6(0.9)
Percentiles				
5	249.2(3.8)	252.2(3.7)	234.7(3.4)	243.8(1.2)
10	260.0(2.2)	262.7(2.8)	247.2(2.7)	255.6(2.0)
25	277.0(1.4)	278.9(1.7)	268.9(1.6)	274.8(1.1)
50	297.6(2.0)	297.1(1.2)	293.7(1.1)	295.0(1.3)
75	316.4(2.6)	314.5(1.3)	317.0(1.3)	314.2(1.8)
90	333.0(2.6)	329.3(1.3)	338.2(2.2)	331.4(1.4)
95	343.0(4.0)	337.7(2.8)	349.6(2.8)	341.0(2.5)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grade 11

Weighted means, standard deviations, and percentiles of the writing distribution with jackknifed standard errors

	1984	1988	1990	1992
BLACK STUDENTS				
Mean	270.3(3.6)	275.2(2.9)	268.2(2.3)	263.2(3.2)
St. Dev.	29.6(2.4)	26.0(1.4)	34.3(1.1)	28.9(1.4)
Percentiles				
5	221.8(8.5)	231.7(6.2)	213.1(5.4)	216.4(5.0)
10	231.8(6.8)	242.8(2.9)	224.7(3.0)	226.3(3.2)
25	251.6(5.5)	257.5(3.3)	244.9(2.3)	244.7(5.8)
50	270.0(3.3)	275.7(3.0)	268.4(3.2)	263.8(3.9)
75	289.6(4.6)	293.8(3.0)	291.4(4.0)	282.6(4.3)
90	308.9(7.8)	308.9(4.9)	311.0(2.3)	300.5(4.1)
95	317.6(5.0)	318.1(3.8)	324.0(4.4)	309.3(5.1)
HISPANIC STUDENTS				
Mean	259.1(6.6)	273.8(4.4)	276.9(2.6)	273.6(3.8)
St. Dev.	30.8(2.0)	28.1(1.7)	36.2(2.3)	31.3(1.5)
Percentiles				
5	207.5 (10.8)	228.3(6.2)	217.4(9.7)	220.4 (10.6)
10	216.5(6.5)	235.9(8.4)	231.5(4.1)	234.0(2.7)
25	238.2(7.5)	256.1(6.2)	252.6(4.0)	252.4(6.0)
50	260.3(8.2)	274.1(3.9)	275.4(3.2)	275.3(4.6)
75	281.1(7.1)	294.3(8.7)	300.8(6.0)	294.1(4.9)
90	297.3(9.8)	309.0(5.6)	324.2(3.9)	313.7(3.5)
95	305.7 (16.8)	316.3(5.4)	337.7 (15.8)	323.7(3.1)

The standard errors of the estimated proficiencies appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in overall characteristics of papers

		Percentiles			
	YEAR	25th	50th	75th	90th
NUMBER OF WORDS					
Grade 4	1992	20.9	29.5	44.4	62.5
	1990	18.4	28.4	43.3	62.7
	1988	19.4	31.6	47.0	64.3
	1984	20.2	30.1	41.4	60.5
Grade 8	1992	46.0	66.4	100.6	137.8
	1990	40.7	65.9	100.0	132.3
	1988	45.1	66.6	98.0	125.8
	1984	40.2	58.3	89.2	120.0
Grade 11	1992	64.2	94.3	130.7	163.6
	1990	62.4	90.2	123.8	161.8
	1988	64.1	92.4	123.9	158.3
	1984	58.3	84.5	122.8	157.5
WORD LENGTH					
Grade 4	1992	3.7	4.0	4.3	4.6
	1990	3.7	4.0	4.3	4.5
	1988	3.7	4.0	4.3	4.5
	1984	3.7	4.0	4.3	4.5
Grade 8	1992	3.8	4.1	4.4	4.9
	1990	3.8	4.0	4.3	4.5
	1988	3.8	4.0	4.3	4.5
	1984	3.8	4.1	4.3	4.6
Grade 11	1992	3.9	4.2	4.7	5.2
	1990	3.8	4.1	4.5	5.0
	1988	3.8	4.2	4.6	5.1
	1984	3.8	4.2	4.6	5.1
NUMBER OF SENTENCES					
Grade 4	1992	1.2	2.1	3.4	5.0
	1990	1.1	2.0	3.6	5.1
	1988	1.3	2.3	3.7	5.0
	1984	1.3	2.2	3.4	4.8
Grade 8	1992	2.8	4.4	6.6	9.2
	1990	2.7	4.4	6.4	9.2
	1988	2.7	4.4	6.8	8.8
	1984	2.3	3.9	5.9	8.2
Grade 11	1992	3.8	5.8	8.1	10.8
	1990	3.7	5.4	7.6	9.5
	1988	3.8	5.5	7.3	9.7
	1984	3.4	5.2	7.3	9.9

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in overall characteristics of papers (continued)

	YEAR	Percentiles			
		25th	50th	75th	90th
NUMBER OF WORDS PER SENTENCE					
Grade 4	1992	10.1	13.6	19.4	27.4
	1990	9.2	12.9	18.7	28.1
	1988	9.1	12.5	17.6	26.6
	1984	9.5	12.7	18.0	25.5
Grade 8	1992	12.4	15.3	19.1	25.5
	1990	11.9	15.2	19.3	25.3
	1988	12.0	14.5	18.1	24.8
	1984	12.5	15.3	19.0	26.5
Grade 11	1992	13.3	16.0	19.5	24.9
	1990	14.1	16.5	19.8	25.1
	1988	14.2	16.9	19.7	24.6
	1984	13.9	16.2	20.3	25.5
NUMBER OF ERRORS					
Grade 4	1992	2.4	4.4	7.0	11.1
	1990	2.2	4.1	6.7	9.4
	1988	2.2	4.0	6.8	10.3
	1984	2.0	3.8	6.3	10.0
Grade 8	1992	3.8	6.2	9.2	13.2
	1990	3.2	5.9	9.5	13.5
	1988	2.8	5.3	8.4	11.8
	1984	2.4	4.4	7.8	12.0
Grade 11	1992	2.9	5.1	8.9	12.9
	1990	3.5	5.8	9.5	13.4
	1988	2.3	4.6	7.2	11.1
	1984	2.9	4.8	7.5	11.4
ERROR RATE					
Grade 4	1992	8.5	14.3	24.1	32.7
	1990	8.1	14.8	22.9	32.9
	1988	7.5	13.2	21.0	35.0
	1984	7.3	13.4	20.6	30.5
Grade 8	1992	5.8	8.7	13.6	18.5
	1990	5.5	9.1	13.4	19.3
	1988	4.6	8.2	13.5	18.1
	1984	4.5	7.5	12.2	17.7
Grade 11	1992	3.4	5.8	9.5	15.0
	1990	4.2	6.7	9.4	13.4
	1988	2.8	4.9	8.1	11.9
	1984	3.4	5.9	9.5	13.7

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Trends in sentence-level errors

		Percentiles			
	YEAR	**25th**	**50th**	**75th**	**90th**
PERCENTAGE RUN-ON SENTENCES					
Grade 4	**1992**	0.0	0.1	0.4	50.4
	1990	0.0	0.2	16.9	99.7
	1988	0.0	0.2	24.7	67.2
	1984	0.0	0.2	20.3	50.3
Grade 8	**1992**	0.0	0.1	0.5	24.9
	1990	0.0	0.2	0.5	33.2
	1988	0.0	0.1	0.4	29.0
	1984	0.0	0.1	0.4	25.1
Grade 11	**1992**	0.0	0.1	0.4	14.5
	1990	0.0	0.1	0.4	17.3
	1988	0.0	0.1	0.4	12.0
	1984	0.0	0.1	0.4	19.9
PERCENTAGE SENTENCE FRAGMENTS					
Grade 4	**1992**	0.0	0.1	0.3	19.9
	1990	0.0	0.1	0.3	17.1
	1988	0.0	0.1	0.4	24.6
	1984	0.0	0.0	0.3	0.5
Grade 8	**1992**	0.0	0.1	0.4	19.6
	1990	0.0	0.1	0.4	17.0
	1988	0.0	0.1	0.4	14.1
	1984	0.0	0.1	0.4	14.1
Grade 11	**1992**	0.0	0.1	0.4	16.9
	1990	0.0	0.1	0.3	10.9
	1988	0.0	0.1	0.4	11.5
	1984	0.0	0.1	0.4	12.5
PERCENTAGE SENTENCES WITH AGREEMENT ERRORS					
Grade 4	**1992**	0.0	0.1	0.4	49.8
	1990	0.0	0.0	0.3	0.5
	1988	0.0	0.0	0.3	0.5
	1984	0.0	0.0	0.3	0.5
Grade 8	**1992**	0.0	0.2	11.2	29.4
	1990	0.0	0.1	0.3	11.5
	1988	0.0	0.1	0.3	8.1
	1984	0.0	0.1	0.3	9.0
Grade 11	**1992**	0.0	0.2	10.6	24.7
	1990	0.0	0.1	0.4	11.3
	1988	0.0	0.0	0.3	0.5
	1984	0.0	0.1	0.3	0.5

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in sentence-level errors (continued)

		Percentiles			
	YEAR	25th	50th	75th	90th
PERCENTAGE AWKWARD SENTENCES					
Grade 4	1992	0.0	14.0	50.3	100.0
	1990	0.0	20.0	66.9	100.0
	1988	0.0	14.4	50.2	99.9
	1984	0.0	0.4	49.6	99.8
Grade 8	1992	10.5	25.2	49.6	74.7
	1990	17.3	33.5	59.9	99.6
	1988	12.5	32.9	50.4	99.7
	1984	0.3	25.4	49.9	99.6
Grade 11	1992	0.4	20.2	39.7	59.9
	1990	17.2	33.2	50.5	75.3
	1988	0.2	17.1	37.4	60.1
	1984	7.8	25.0	49.8	71.5

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Trends in word-level errors

		Percentiles			
	YEAR	25th	50th	75th	90th
PERCENTAGE MISSPELLED WORDS					
Grade 4	1992	2.9	6.6	13.0	21.5
	1990	2.5	6.5	13.9	20.5
	1988	2.4	6.4	12.0	22.5
	1984	2.2	6.6	12.0	18.1
Grade 8	1992	0.9	2.9	5.6	9.4
	1990	0.9	2.9	5.5	9.9
	1988	0.7	2.8	5.7	9.2
	1984	0.4	2.7	5.2	9.0
Grade 11	1992	0.4	1.5	3.5	5.9
	1990	0.6	1.9	3.6	6.4
	1988	0.2	1.3	2.8	4.6
	1984	0.4	1.5	3.3	5.9
PERCENTAGE WORD-CHOICE ERRORS					
Grade 4	1992	0.0	0.1	0.4	2.9
	1990	0.0	0.1	0.4	2.1
	1988	0.0	0.1	0.4	2.2
	1984	0.0	0.1	0.4	3.0
Grade 8	1992	0.0	0.2	0.9	2.2
	1990	0.0	0.2	0.8	2.1
	1988	0.0	0.2	0.9	2.4
	1984	0.0	0.2	0.9	2.4
Grade 11	1992	0.0	0.2	0.8	1.6
	1990	0.0	0.3	1.0	1.8
	1988	0.0	0.2	0.9	2.0
	1984	0.0	0.3	1.1	2.0
PERCENTAGE CAPITALIZATION ERRORS					
Grade 4	1992	0.0	0.1	0.4	3.8
	1990	0.0	0.1	0.3	1.8
	1988	0.0	0.0	0.3	0.5
	1984	0.0	0.1	0.3	0.5
Grade 8	1992	0.0	0.2	0.5	2.7
	1990	0.0	0.1	0.3	0.7
	1988	0.0	0.1	0.3	0.5
	1984	0.0	0.0	0.3	0.5
Grade 11	1992	0.0	0.1	0.4	1.6
	1990	0.0	0.0	0.3	0.5
	1988	0.0	0.0	0.3	0.4
	1984	0.0	0.0	0.3	0.4

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Trends in punctuation errors

		Percentiles			
	YEAR	**25th**	**50th**	**75th**	**90th**
TOTAL PUNCTUATION ERRORS PER 100 WORDS					
Grade 4	**1992**	0.0	1.6	4.4	7.3
	1990	0.0	1.6	4.5	7.8
	1988	0.0	1.4	4.4	7.8
	1984	0.0	0.5	4.3	7.2
Grade 8	**1992**	0.3	1.6	3.0	4.5
	1990	0.2	1.5	3.0	4.7
	1988	0.1	1.0	2.7	4.6
	1984	0.1	1.2	2.6	4.3
Grade 11	**1992**	0.1	0.8	2.1	3.4
	1990	0.3	1.2	2.3	3.5
	1988	0.3	1.2	2.3	3.8
	1984	0.2	1.1	2.3	4.2
PUNCTUATION OMITTED PER 100 WORDS					
Grade 4	**1992**	0.0	0.4	3.9	6.2
	1990	0.0	0.7	4.4	7.8
	1988	0.0	0.7	4.1	7.4
	1984	0.0	0.4	3.8	6.9
Grade 8	**1992**	0.1	1.1	2.5	4.0
	1990	0.1	1.0	2.5	4.3
	1988	0.0	0.5	2.1	4.0
	1984	0.0	0.5	2.0	3.8
Grade 11	**1992**	0.0	0.6	1.7	2.8
	1990	0.1	0.9	1.9	3.1
	1988	0.1	0.7	1.9	3.1
	1984	0.0	0.6	1.9	3.6
WRONG PUNCTUATION PER 100 WORDS					
Grade 4	**1992**	0.0	0.1	0.4	1.6
	1990	0.0	0.0	0.3	0.4
	1988	0.0	0.0	0.3	0.5
	1984	0.0	0.0	0.3	0.5
Grade 8	**1992**	0.0	0.1	0.4	1.6
	1990	0.0	0.1	0.4	1.2
	1988	0.0	0.1	0.4	1.5
	1984	0.0	0.1	0.5	1.9
Grade 11	**1992**	0.0	0.1	0.4	1.2
	1990	0.0	0.1	0.5	1.3
	1988	0.0	0.2	0.5	1.5
	1984	0.0	0.1	0.4	1.4

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in overall characteristics of papers for good and poor papers

	YEAR	Task Accomplishment		Overall Fluency	
		Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
NUMBER OF WORDS					
Grade 4	**1992**	47.1(1.5)	31.8(0.9)	55.6(2.3)	29.5(0.7)
	1990	53.3(2.3)	27.2(0.9)	51.4(1.8)	27.6(1.1)
	1988	51.4(4.2)	30.0(1.3)	60.7(4.7)	29.8(0.9)
	1984	48.4(2.1)	28.4(0.8)	51.5(2.6)	29.2(0.8)
Grade 8	**1992**	108.4(4.9)	73.8(3.0)	100.0(4.0)	56.7(2.6)
	1990	126.0(9.7)	68.9(1.8)	99.9(2.7)	52.6(2.8)
	1988	109.4(8.0)	69.6(2.5)	92.5(2.5)	52.3(2.0)
	1984	91.9(4.2)	63.7(1.9)	91.0(3.0)	53.5(1.7)
Grade 11	**1992**	138.4(4.0)	91.9(2.5)	121.0(1.8)	64.8(3.5)
	1990	140.3(4.5)	89.0(2.5)	117.0(2.8)	60.7(2.7)
	1988	131.9(5.2)	88.6(2.2)	114.0(2.5)	62.1(2.8)
	1984	134.5(7.1)	84.0(1.6)	114.1(3.0)	63.6(2.4)
WORD LENGTH					
Grade 4	**1992**	4.0(0.0)	4.1(0.0)	4.0(0.0)	4.1(0.0)
	1990	4.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)
	1988	4.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)
	1984	4.0(0.0)	4.0(0.0)	3.9(0.0)	4.0(0.0)
Grade 8	**1992**	4.2(0.0)	4.2(0.0)	4.2(0.0)	4.2(0.1)
	1990	4.2(0.0)	4.1(0.0)	4.1(0.0)	4.0(0.0)
	1986	4.2(0.1)	4.1(0.0)	4.1(0.0)	4.1(0.0)
	1984	4.2(0.0)	4.1(0.0)	4.2(0.0)	4.1(0.0)
Grade 11	**1992**	4.5(0.0)	4.3(0.0)	4.4(0.0)	4.3(0.0)
	1990	4.4(0.0)	4.2(0.0)	4.3(0.0)	4.2(0.0)
	1988	4.4(0.0)	4.3(0.0)	4.3(0.0)	4.3(0.0)
	1984	4.4(0.1)	4.3(0.0)	4.4(0.0)	4.2(0.0)
NUMBER OF SENTENCES					
Grade 4	**1992**	3.5(0.2)	2.3(0.1)	3.8(0.2)	2.2(0.1)
	1990	3.9(0.2)	2.1(0.1)	3.7(0.2)	2.2(0.1)
	1988	3.8(0.3)	2.3(0.1)	4.5(0.3)	2.3(0.1)
	1984	3.8(0.3)	2.2(0.1)	4.0(0.3)	2.3(0.1)
Grade 8	**1992**	7.2(0.4)	4.8(0.2)	6.5(0.3)	3.8(0.3)
	1990	7.8(0.6)	4.6(0.1)	6.5(0.2)	3.6(0.2)
	1988	6.4(0.7)	4.8(0.2)	6.2(0.2)	3.6(0.2)
	1984	5.9(0.3)	4.2(0.1)	6.0(0.2)	3.5(0.1)
Grade 11	**1992**	8.4(0.3)	5.7(0.2)	7.5(0.2)	4.1(0.3)
	1990	8.2(0.3)	5.4(0.2)	6.9(0.2)	3.8(0.2)
	1988	7.9(0.4)	5.3(0.2)	6.7(0.2)	4.0(0.2)
	1984	8.3(0.4)	5.0(0.1)	6.8(0.2)	3.9(0.2)

The standard errors appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in overall characteristics of papers for good and poor papers (continued)

		Task Accomplishment		Overall Fluency	
	YEAR	Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
NUMBER OF WORDS PER SENTENCE					
Grade 4	**1992**	16.2(0.8)	16.3(0.4)	17.9(1.1)	15.9(0.5)
	1990	17.9(1.2)	15.4(0.5)	18.6(1.1)	14.8(0.5)
	1988	15.9(1.4)	14.9(0.7)	15.5(1.5)	15.2(0.7)
	1984	16.0(0.7)	14.7(0.4)	15.8(1.1)	14.9(0.4)
Grade 8	**1992**	16.7(1.2)	18.2(0.9)	18.4(1.4)	17.5(0.6)
	1990	17.0(0.9)	16.6(0.3)	16.7(0.3)	16.6(0.4)
	1988	20.2(2.7)	16.7(0.5)	16.8(0.7)	17.0(0.6)
	1984	16.7(0.8)	17.4(0.4)	16.3(0.4)	17.9(0.5)
Grade 11	**1992**	17.3(0.5)	17.5(0.4)	17.0(0.3)	18.1(0.8)
	1990	18.0(0.6)	17.7(0.3)	17.7(0.3)	17.9(0.6)
	1988	17.4(0.5)	18.2(0.6)	18.3(0.5)	17.5(0.7)
	1984	16.5(0.3)	18.6(0.5)	18.2(0.5)	18.1(0.6)
NUMBER OF ERRORS					
Grade 4	**1992**	6.5(0.5)	5.2(0.2)	6.6(0.4)	5.1(0.2)
	1990	7.2(0.7)	4.4(0.2)	6.4(0.4)	4.6(0.3)
	1988	5.0(0.6)	5.0(0.3)	6.1(0.7)	4.7(0.3)
	1984	5.9(0.4)	4.3(0.2)	5.7(0.4)	4.4(0.2)
Grade 8	**1992**	8.3(0.5)	6.9(0.2)	8.2(0.3)	6.0(0.3)
	1990	8.3(0.7)	6.8(0.3)	8.2(0.3)	5.8(0.3)
	1988	7.0(0.8)	6.1(0.2)	7.0(0.3)	5.4(0.3)
	1984	7.6(0.7)	5.3(0.2)	6.8(0.3)	4.9(0.2)
Grade 11	**1992**	7.4(0.5)	6.2(0.2)	6.8(0.2)	5.8(0.4)
	1990	8.5(0.6)	6.6(0.2)	7.7(0.4)	5.5(0.4)
	1988	6.1(0.4)	5.1(0.4)	5.6(0.3)	4.6(0.4)
	1984	6.6(0.6)	5.6(0.2)	6.2(0.2)	5.3(0.3)
ERROR RATE					
Grade 4	**1992**	14.9(1.0)	17.5(0.6)	12.4(0.8)	18.1(0.6)
	1990	13.8(0.8)	18.8(1.0)	12.8(0.8)	19.2(1.0)
	1988	9.9(0.6)	20.1(1.7)	10.5(0.7)	18.8(1.7)
	1984	12.6(0.7)	16.5(0.7)	11.1(0.7)	16.6(0.7)
Grade 8	**1992**	8.2(0.7)	11.1(0.8)	8.8(0.4)	12.7(1.5)
	1990	7.1(0.5)	11.0(0.4)	8.5(0.3)	12.4(0.7)
	1988	6.6(0.9)	9.8(0.4)	7.9(0.4)	11.4(0.6)
	1984	8.7(0.8)	9.2(0.4)	7.6(0.3)	10.1(0.5)
Grade 11	**1992**	5.3(0.4)	7.9(0.5)	5.8(0.2)	10.2(0.9)
	1990	6.1(0.4)	8.1(0.4)	6.7(0.2)	9.8(1.0)
	1988	4.7(0.3)	6.6(0.5)	5.1(0.3)	8.5(1.0)
	1984	5.5(0.7)	7.2(0.2)	5.7(0.3)	8.8(0.3)

The standard errors appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in sentence-level errors for good and poor papers

		Task Accomplishment		Overall Fluency	
	YEAR	Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
PERCENTAGE RUN-ON SENTENCES					
Grade 4	**1992**	11.5(2.8)	13.6(1.7)	11.2(2.3)	13.7(1.8)
	1990	17.1(2.8)	17.5(2.0)	16.5(2.6)	17.7(2.0)
	1988	16.0(4.2)	17.3(2.8)	12.9(4.7)	18.0(2.4)
	1984	17.9(2.9)	14.4(1.7)	15.4(4.1)	15.3(1.6)
Grade 8	**1992**	3.3(1.0)	8.4(1.0)	6.0(1.0)	9.5(1.6)
	1990	6.8(2.5)	10.0(1.0)	7.2(1.2)	11.7(1.4)
	1988	7.5(4.5)	7.8(1.3)	6.4(1.2)	9.2(2.1)
	1984	4.8(1.6)	7.6(1.0)	5.2(1.1)	8.4(1.4)
Grade 11	**1992**	3.5(1.1)	5.5(1.0)	3.2(0.6)	8.4(1.9)
	1990	4.5(1.6)	5.6(0.9)	4.0(0.7)	7.9(2.1)
	1988	2.0(0.5)	4.4(1.2)	3.5(0.9)	5.0(1.9)
	1984	2.9(0.8)	4.9(0.8)	3.5(0.8)	6.2(1.1)
PERCENTAGE FRAGMENTS					
Grade 4	**1992**	3.1(0.8)	4.6(0.6)	4.6(1.1)	4.2(0.6)
	1990	3.6(0.8)	4.4(0.8)	3.8(1.0)	4.4(0.9)
	1988	3.4(1.2)	5.4(1.5)	4.4(1.4)	4.9(1.2)
	1984	2.9(0.8)	3.3(0.6)	2.3(0.9)	3.4(0.6)
Grade 8	**1992**	5.5(1.7)	4.1(0.7)	3.8(0.6)	4.9(1.2)
	1990	1.0(0.5)	3.9(0.4)	2.5(0.4)	4.5(0.7)
	1988	0.7(0.5)	3.9(0.6)	3.0(0.7)	4.4(1.0)
	1984	6.0(2.2)	2.8(0.5)	3.5(0.9)	3.1(0.6)
Grade 11	**1992**	2.8(0.9)	4.5(0.9)	3.1(0.5)	6.0(1.9)
	1990	1.3(0.4)	3.0(0.5)	1.7(0.3)	4.5(1.1)
	1988	2.2(0.9)	2.7(0.6)	2.0(0.5)	3.7(1.1)
	1984	3.9(1.5)	2.8(0.4)	2.4(0.5)	3.8(0.9)
PERCENTAGE SENTENCES WITH AGREEMENT ERRORS					
Grade 4	**1992**	7.0(1.6)	12.1(1.4)	7.4(1.5)	12.0(1.4)
	1990	3.3(1.0)	3.7(0.7)	2.1(0.7)	4.1(0.8)
	1988	0.9(0.5)	3.1(0.7)	1.3(0.7)	2.8(0.7)
	1984	4.1(1.4)	3.2(0.6)	4.3(1.4)	3.3(0.8)
Grade 8	**1992**	4.4(1.0)	9.0(0.7)	8.0(0.9)	8.6(1.3)
	1990	4.1(1.6)	3.5(0.6)	2.5(0.5)	4.5(0.9)
	1988	0.9(0.5)	2.6(0.5)	1.9(0.4)	3.1(0.8)
	1984	4.7(1.8)	2.9(0.7)	2.8(0.7)	3.3(0.8)
Grade 11	**1992**	4.3(0.8)	7.6(0.7)	5.6(0.6)	9.5(1.1)
	1990	2.2(0.5)	2.6(0.4)	2.7(0.4)	2.2(0.6)
	1988	1.3(0.4)	1.8(0.4)	1.5(0.3)	2.0(0.6)
	1984	1.3(0.4)	3.0(0.6)	1.9(0.5)	3.6(1.0)

The standard errors appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in sentence-level errors for good and poor papers (continued)

		Task Accomplishment		Overall Fluency	
	YEAR	Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
PERCENTAGE AWKWARD SENTENCES					
Grade 4	1992	30.3(3.7)	32.7(2.0)	32.4(4.1)	32.2(2.2)
	1990	31.1(3.3)	35.9(2.0)	32.6(3.8)	35.2(2.0)
	1988	25.2(3.3)	33.6(3.1)	22.2(4.6)	33.6(2.8)
	1984	21.4(3.2)	26.9(2.3)	20.5(3.2)	26.7(2.2)
Grade 8	1992	27.6(2.9)	32.1(1.5)	30.2(1.6)	33.0(1.9)
	1990	35.5(3.0)	40.5(1.6)	37.9(1.2)	41.8(2.5)
	1988	36.5(7.2)	38.1(2.1)	31.9(1.8)	44.0(2.9)
	1984	22.8(3.5)	33.6(1.8)	24.9(1.9)	36.6(2.3)
Grade 11	1992	24.3(2.2)	26.8(1.6)	23.1(1.1)	31.8(2.9)
	1990	36.7(2.5)	38.1(1.9)	35.7(1.4)	41.6(3.4)
	1988	21.1(1.6)	25.0(1.7)	22.0(1.8)	28.9(2.2)
	1984	24.8(2.1)	32.6(2.0)	28.0(1.8)	35.6(3.0)

The standard errors appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in word-level errors for good and poor papers

		Task Accomplishment		Overall Fluency	
	YEAR	Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
PERCENTAGE MISSPELLED WORDS					
Grade 4	**1992**	8.3(0.9)	9.0(0.5)	6.3(0.6)	9.6(0.4)
	1990	7.5(0.6)	9.6(0.7)	6.5(0.6)	9.9(0.7)
	1988	4.8(0.6)	10.8(0.9)	5.6(0.7)	9.9(0.9)
	1984	7.0(0.6)	8.9(0.5)	6.1(0.5)	9.0(0.5)
Grade 8	**1992**	3.1(0.5)	4.0(0.2)	3.4(0.3)	4.4(0.3)
	1990	2.5(0.3)	4.4(0.3)	3.1(0.2)	5.2(0.5)
	1988	2.5(0.7)	4.1(0.2)	3.1(0.2)	4.8(0.3)
	1984	4.0(0.6)	3.6(0.2)	3.1(0.3)	4.1(0.3)
Grade 11	**1992**	1.9(0.2)	2.5(0.2)	2.0(0.1)	3.2(0.4)
	1990	1.8(0.2)	3.2(0.4)	2.2(0.1)	4.4(0.9)
	1988	1.5(0.2)	2.1(0.2)	1.6(0.2)	2.8(0.4)
	1984	2.0(0.5)	2.4(0.1)	2.0(0.2)	2.8(0.2)
PERCENTAGE WORD CHOICE ERRORS					
Grade 4	**1992**	0.6(0.1)	0.8(0.1)	0.6(0.1)	0.8(0.1)
	1990	0.6(0.1)	0.5(0.1)	0.5(0.1)	0.6(0.1)
	1988	0.3(0.1)	0.7(0.1)	0.3(0.1)	0.6(0.1)
	1984	0.6(0.2)	0.8(0.1)	0.5(0.2)	0.8(0.1)
Grade 8	**1992**	0.6(0.1)	0.6(0.1)	0.5(0.1)	0.7(0.1)
	1990	0.4(0.1)	0.6(0.1)	0.6(0.1)	0.6(0.1)
	1988	0.4(0.2)	0.7(0.1)	0.6(0.1)	0.8(0.1)
	1984	0.7(0.1)	0.7(0.1)	0.6(0.1)	0.7(0.1)
Grade 11	**1992**	0.3(0.1)	0.6(0.1)	0.4(0.0)	0.7(0.1)
	1990	0.4(0.1)	0.5(0.1)	0.5(0.0)	0.5(0.1)
	1988	0.3(0.1)	0.6(0.1)	0.4(0.0)	0.8(0.1)
	1984	0.4(0.1)	0.7(0.1)	0.5(0.1)	0.8(0.1)
PERCENTAGE CAPITALIZATION ERRORS					
Grade 4	**1992**	0.5(0.1)	1.1(0.1)	0.5(0.1)	1.1(0.1)
	1990	0.3(0.1)	0.9(0.2)	0.4(0.1)	0.8(0.2)
	1988	0.2(0.1)	0.7(0.4)	0.1(0.1)	0.7(0.3)
	1984	0.3(0.1)	0.5(0.1)	0.2(0.1)	0.5(0.1)
Grade 8	**1992**	0.6(0.2)	1.1(0.4)	0.5(0.1)	1.5(0.8)
	1990	0.2(0.1)	0.3(0.1)	0.2(0.1)	0.4(0.1)
	1988	0.2(0.1)	0.2(0.0)	0.2(0.0)	0.1(0.0)
	1984	0.2(0.1)	0.3(0.1)	0.1(0.0)	0.4(0.1)
Grade 11	**1992**	0.2(0.0)	0.6(0.1)	0.3(0.0)	1.0(0.3)
	1990	0.1(0.0)	0.1(0.0)	0.1(0.0)	0.2(0.0)
	1988	0.0(0.0)	0.1(0.1)	0.1(0.0)	0.2(0.1)
	1984	0.1(0.1)	0.1(0.0)	0.1(0.0)	0.1(0.1)

The standard errors appear in parentheses.

NAEP 1992 National Writing Trend Assessment — Grades 4, 8, and 11

Trends in punctuation-level errors for good and poor papers

		Task Accomplishment		Overall Fluency	
	YEAR	Good Papers (Primary Trait) 3+4	Poor Papers (Primary Trait) 1+2	Good Papers (Holistic) 4,5+6	Poor Papers (Holistic) 1,2+3
TOTAL PUNCTUATION ERRORS PER 100 WORDS					
Grade 4	1992	2.4(0.2)	2.6(0.2)	2.1(0.2)	2.7(0.2)
	1990	2.4(0.2)	3.4(0.4)	2.5(0.3)	3.3(0.3)
	1988	1.7(0.2)	3.7(0.5)	1.9(0.2)	3.5(0.5)
	1984	1.8(0.2)	2.9(0.3)	1.7(0.2)	2.9(0.2)
Grade 8	1992	1.5(0.2)	2.0(0.1)	1.7(0.1)	2.1(0.2)
	1990	1.4(0.2)	2.1(0.1)	1.7(0.1)	2.3(0.2)
	1988	1.3(0.2)	1.8(0.1)	1.4(0.1)	2.1(0.2)
	1984	1.5(0.2)	1.8(0.1)	1.5(0.2)	1.9(0.2)
Grade 11	1992	1.0(0.1)	1.4(0.1)	1.2(0.1)	1.6(0.2)
	1990	1.3(0.2)	1.5(0.1)	1.4(0.1)	1.7(0.2)
	1988	1.3(0.1)	1.9(0.4)	1.4(0.1)	2.6(0.8)
	1984	0.9(0.1)	1.7(0.1)	1.2(0.1)	2.3(0.3)
PUNCTUATION OMITTED PER 100 WORDS					
Grade 4	1992	1.9(0.2)	2.2(0.2)	1.6(0.2)	2.3(0.2)
	1990	2.3(0.2)	3.2(0.4)	2.4(0.3)	3.2(0.3)
	1988	1.6(0.2)	3.5(0.5)	1.7(0.3)	3.3(0.5)
	1984	1.6(0.3)	2.6(0.2)	1.3(0.2)	2.6(0.2)
Grade 8	1992	1.2(0.2)	1.6(0.1)	1.4(0.1)	1.7(0.1)
	1990	1.0(0.1)	1.8(0.1)	1.3(0.1)	2.0(0.2)
	1988	1.0(0.2)	1.4(0.1)	1.0(0.1)	1.7(0.2)
	1984	1.2(0.2)	1.4(0.1)	1.1(0.1)	1.5(0.1)
Grade 11	1992	0.7(0.1)	1.1(0.1)	0.9(0.1)	1.3(0.2)
	1990	1.1(0.1)	1.2(0.1)	1.1(0.1)	1.3(0.1)
	1988	1.0(0.1)	1.5(0.4)	1.0(0.1)	2.2(0.8)
	1984	0.6(0.1)	1.3(0.1)	0.9(0.1)	1.9(0.3)
WRONG PUNCTUATION PER 100 WORDS					
Grade 4	1992	0.5(0.1)	0.4(0.1)	0.4(0.1)	0.4(0.1)
	1990	0.1(0.0)	0.2(0.0)	0.1(0.1)	0.1(0.0)
	1988	0.1(0.0)	0.2(0.0)	0.2(0.1)	0.2(0.0)
	1984	0.2(0.1)	0.3(0.1)	0.4(0.1)	0.2(0.1)
Grade 8	1992	0.2(0.1)	0.4(0.1)	0.4(0.0)	0.4(0.1)
	1990	0.3(0.1)	0.3(0.0)	0.3(0.0)	0.2(0.0)
	1988	0.2(0.1)	0.4(0.1)	0.4(0.1)	0.4(0.1)
	1984	0.4(0.1)	0.5(0.1)	0.5(0.1)	0.5(0.1)
Grade 11	1992	0.2(0.1)	0.3(0.0)	0.2(0.0)	0.3(0.0)
	1990	0.2(0.1)	0.3(0.0)	0.3(0.0)	0.3(0.1)
	1988	0.3(0.1)	0.4(0.1)	0.4(0.1)	0.4(0.1)
	1984	0.3(0.1)	0.4(0.0)	0.3(0.1)	0.4(0.1)

The standard errors appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 4

Percentages of students at each score point, means, and standard errors for items scored by primary trait and holistic methods

	Not Rated	Unsatis-factory	Minimal	Adequate	Elaborated	Minimal or Better	Adequate or Better		
PRIMARY TRAIT									
Plants	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.4(0.4)	14.7(1.4)	43.8(2.3)	40.0(2.2)		83.9(1.6)			2.22(0.03)
1988	1.3(0.6)	16.0(1.4)	42.5(1.6)	40.2(1.8)		82.7(1.7)			2.22(0.03)
1990	0.8(0.2)	23.3(1.5)	39.3(1.6)	36.7(1.7)		75.9(1.5)			2.12(0.03)
1992	1.0(0.3)	16.1(1.0)	42.7(1.6)	40.2(1.6)		82.9(1.1)			2.22(0.02)
XYZ Company	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	3.8(1.2)	50.1(2.6)	8.6(1.2)	37.5(2.3)		46.1(2.4)			1.80(0.05)
1988	2.8(0.4)	52.8(1.8)	8.7(0.9)	35.6(1.9)		44.3(1.8)			1.77(0.04)
1990	1.7(0.4)	55.4(1.5)	4.4(0.6)	38.5(1.5)		42.9(1.4)			1.80(0.03)
1992	2.2(0.4)	50.7(1.4)	11.6(0.9)	35.4(1.4)		47.0(1.4)			1.80(0.03)
Spaceship	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	6.9(1.1)	30.0(1.8)	43.1(2.2)	19.7(1.4)	0.3(0.2)	63.1(2.2)	20.0(1.4)		1.77(0.04)
1988	5.2(0.6)	33.2(1.3)	36.7(1.6)	23.7(1.7)	1.2(0.4)	61.6(1.1)	24.9(1.7)		1.82(0.02)
1990	2.8(0.5)	31.1(1.6)	42.1(1.6)	23.3(1.4)	0.6(0.2)	66.1(1.5)	24.0(1.4)		1.88(0.03)
1992	4.7(0.5)	31.4(1.2)	43.9(1.3)	19.6(1.3)	0.4(0.2)	63.9(1.2)	20.0(1.3)		1.80(0.02)
Radio Station	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	6.9(1.0)	50.0(1.9)	31.7(2.2)	11.3(1.6)	0.1(0.1)	43.1(2.0)	11.4(1.6)		1.48(0.03)
1988	4.8(0.7)	46.6(1.4)	33.5(1.3)	15.1(1.2)	0.0(0.0)	48.6(1.6)	15.1(1.2)		1.59(0.03)
1990	2.3(0.5)	49.7(1.8)	35.1(1.6)	12.6(1.0)	0.2(0.2)	47.9(1.8)	12.8(1.1)		1.59(0.03)
1992	3.9(0.5)	45.6(1.5)	32.8(1.2)	17.4(1.0)	0.3(0.2)	50.5(1.5)	17.7(1.0)		1.65(0.02)
Appleby House	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	4.3(1.1)	28.7(2.1)	50.8(2.2)	16.2(1.3)	0.0(0.0)	67.0(2.5)	16.2(1.3)		1.79(0.04)
1988	2.2(0.6)	24.6(1.3)	49.5(1.4)	23.7(1.7)	0.0(0.0)	73.2(1.1)	23.7(1.7)		1.95(0.02)
1990	1.8(0.5)	22.4(1.3)	63.9(1.7)	11.7(1.1)	0.2(0.1)	75.7(1.3)	11.8(1.1)		1.86(0.02)
1992	1.7(0.4)	22.8(1.3)	53.0(2.0)	22.4(1.7)	0.1(0.1)	75.5(1.3)	22.5(1.7)		1.97(0.02)
Flashlight	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.9(0.3)	35.9(2.3)	54.6(2.0)	8.5(1.5)	0.1(0.2)	63.2(2.4)	8.6(1.5)		1.71(0.03)
1988	1.7(0.6)	33.2(2.5)	50.9(2.5)	13.8(2.0)	0.4(0.4)	65.1(2.7)	14.3(2.0)		1.78(0.04)
1990	2.1(0.7)	32.3(2.6)	53.8(2.5)	11.2(1.4)	0.6(0.3)	65.6(2.6)	11.8(1.5)		1.76(0.04)
1992	0.8(0.4)	28.7(1.7)	58.3(1.7)	11.9(1.2)	0.3(0.1)	70.5(1.7)	12.2(1.2)		1.82(0.02)
HOLISTIC									
Spaceship	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	4.3(0.6)	14.2(0.9)	27.3(1.1)	35.6(1.1)	15.3(0.9)	2.8(0.4)	0.5(0.3)	18.7(1.0)	2.54(0.04)
1988	4.2(0.5)	14.6(1.0)	25.7(1.7)	39.9(1.4)	12.3(1.0)	2.9(0.7)	0.5(0.2)	15.6(1.2)	2.52(0.03)
1990	2.3(0.5)	13.3(1.1)	22.4(1.5)	39.2(1.4)	18.2(1.5)	3.6(0.6)	0.9(0.3)	22.8(1.6)	2.72(0.04)
1992	0.0(0.0)	10.6(1.0)	28.7(1.4)	37.9(1.6)	16.9(1.1)	4.7(0.7)	1.2(0.3)	22.7(1.4)	2.80(0.04)
Flashlight	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	0.5(0.2)	9.9(0.7)	25.4(1.3)	30.3(1.2)	21.8(1.0)	9.3(0.7)	2.9(0.3)	33.9(1.5)	3.02(0.04)
1988	0.8(0.4)	9.2(1.3)	26.7(1.7)	29.8(2.0)	23.9(1.7)	7.1(1.2)	2.5(0.7)	33.5(2.1)	2.98(0.05)
1990	1.6(0.6)	11.8(1.3)	23.0(2.3)	27.6(1.5)	21.7(1.8)	10.0(1.4)	4.3(0.8)	36.0(2.2)	3.03(0.07)
1992	0.0(0.0)	9.1(1.1)	25.4(1.8)	27.5(1.7)	21.2(1.8)	11.1(1.2)	5.8(0.8)	38.0(2.0)	3.17(0.05)

The standard errors appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 8

Percentages of students at each score point, means, and standard errors for items scored by primary trait and holistic methods

	Not Rated	Unsatisfactory	Minimal	Adequate	Elaborated	Minimal or Better	Adequate or Better		
PRIMARY TRAIT									
Recreation Opportunity	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	2.2(0.7)	47.6(2.5)	40.5(2.6)	9.6(1.4)	0.2(0.2)	50.2(2.7)	9.7(1.4)		1.58(0.04)
1988	3.1(0.6)	52.3(1.7)	37.4(1.2)	7.2(0.9)	0.1(0.1)	44.6(1.7)	7.2(0.9)		1.49(0.02)
1990	1.3(0.4)	59.4(1.9)	30.2(1.6)	8.5(0.9)	0.6(0.2)	39.3(1.9)	9.1(1.0)		1.48(0.03)
1992	1.2(0.4)	50.4(1.9)	33.8(1.5)	13.8(1.1)	0.8(0.4)	48.4(1.9)	14.5(1.1)		1.63(0.03)
Food on the Frontier	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.8(0.4)	19.2(1.8)	71.3(1.7)	8.5(1.4)	0.2(0.1)	80.0(1.9)	8.7(1.4)		1.88(0.03)
1988	0.6(0.3)	20.9(1.7)	65.7(1.8)	12.5(1.3)	0.3(0.1)	78.5(1.7)	12.8(1.3)		1.91(0.03)
1990	1.4(0.4)	30.1(1.2)	52.3(1.3)	15.7(1.1)	0.4(0.2)	68.5(1.2)	16.1(1.1)		1.84(0.02)
1992	0.4(0.2)	21.1(1.4)	64.8(1.3)	13.1(1.1)	0.6(0.2)	78.4(1.4)	13.6(1.1)		1.92(0.02)
Dissecting Frogs	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.0(0.4)	14.4(1.4)	73.9(1.8)	10.4(1.2)	0.2(0.2)	84.6(1.4)	10.6(1.2)		1.94(0.02)
1988	0.8(0.2)	16.9(1.7)	65.9(1.9)	15.9(1.1)	0.4(0.2)	82.2(1.7)	16.3(1.1)		1.98(0.02)
1990	1.2(0.3)	23.7(1.2)	63.3(1.3)	11.2(0.9)	0.6(0.2)	75.1(1.2)	11.8(0.9)		1.86(0.02)
1992	0.9(0.2)	11.6(1.1)	67.2(1.6)	19.1(1.7)	1.2(0.4)	87.5(1.1)	20.4(1.8)		2.08(0.03)
XYZ Company	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.0(0.0)	15.7(1.4)	11.9(1.5)	72.5(1.9)		84.3(1.4)			2.57(0.03)
1988	0.3(0.2)	21.4(1.4)	7.5(0.8)	70.7(1.4)		78.3(1.4)			2.49(0.03)
1990	0.3(0.1)	22.6(1.4)	7.1(0.6)	70.1(1.4)		77.2(1.4)			2.47(0.03)
1992	0.2(0.1)	21.4(1.4)	6.1(0.7)	72.3(1.6)		78.4(1.4)			2.51(0.03)
Radio Station	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.2(0.2)	27.2(1.7)	41.8(1.8)	30.2(1.9)	0.6(0.2)	72.6(1.7)	30.7(1.9)		2.04(0.03)
1988	0.6(0.2)	33.4(1.5)	40.8(1.6)	24.8(1.0)	0.4(0.2)	66.1(1.5)	25.3(1.0)		1.91(0.02)
1990	0.7(0.3)	34.1(1.5)	40.7(1.3)	23.5(1.3)	1.1(0.3)	65.2(1.5)	24.5(1.3)		1.90(0.03)
1992	0.8(0.2)	27.5(1.5)	40.2(1.8)	30.0(1.5)	1.4(0.4)	71.6(1.6)	31.4(1.4)		2.04(0.03)
Appleby House	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.4(0.3)	9.6(1.5)	44.2(2.4)	44.3(2.4)	1.6(0.5)	90.0(1.5)	45.8(2.4)		2.37(0.03)
1988	0.3(0.2)	10.2(1.1)	40.9(1.8)	47.4(1.6)	1.3(0.3)	89.5(1.1)	48.7(1.6)		2.39(0.02)
1990	0.4(0.2)	9.0(0.8)	51.3(1.5)	36.9(1.5)	2.4(0.5)	90.6(0.8)	39.3(1.5)		2.32(0.02)
1992	0.3(0.2)	7.9(0.8)	33.1(1.5)	57.3(1.5)	1.3(0.3)	91.8(0.8)	58.6(1.4)		2.51(0.02)
HOLISTIC									
Recreation Opportunity	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	1.3(0.2)	7.0(0.6)	16.0(0.9)	38.1(1.4)	26.6(1.3)	8.4(0.7)	2.7(0.3)	37.7(1.4)	3.18(0.03)
1988	1.5(0.4)	4.6(0.7)	14.2(1.4)	32.3(1.0)	32.1(1.6)	12.6(1.5)	2.6(0.6)	47.3(2.0)	3.37(0.05)
1990	1.1(0.4)	6.9(1.2)	13.3(0.9)	33.6(1.1)	29.1(1.2)	11.5(0.8)	4.5(0.6)	45.1(1.5)	3.35(0.05)
1992	0.1(0.1)	4.5(0.8)	11.7(1.2)	35.4(1.6)	30.0(1.7)	14.4(1.2)	3.9(0.7)	48.3(2.1)	3.49(0.05)
Food on the Frontier	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	0.6(0.2)	7.1(0.7)	18.0(0.9)	36.9(0.9)	26.7(1.0)	8.5(0.7)	2.2(0.3)	37.4(1.3)	3.16(0.04)
1988	0.6(0.3)	7.9(1.1)	17.2(1.3)	35.2(1.7)	24.9(1.2)	10.7(1.1)	3.5(0.5)	39.1(1.8)	3.22(0.06)
1990	1.1(0.4)	4.7(0.7)	14.8(1.0)	34.8(1.3)	28.1(1.2)	12.0(0.8)	4.5(0.6)	44.6(1.6)	3.38(0.04)
1992	0.1(0.1)	5.0(0.6)	14.5(1.3)	35.8(1.8)	32.3(1.6)	10.3(0.9)	2.0(0.4)	44.6(1.9)	3.34(0.04)

The standard errors appear in parentheses.

NAEP 1992 Writing Trend Assessment — Grade 11

Percentages of students at each score point, means, and standard errors for items scored by primary trait and holistic methods

	Not Rated	Unsatis-factory	Minimal	Adequate	Elaborated	Minimal or Better	Adequate or Better		
PRIMARY TRAIT									
Recreation Opportunity	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	0.6(0.4)	26.0(2.4)	56.8(3.0)	16.3(2.2)	0.3(0.3)	73.5(2.5)	16.6(2.0)		1.90(0.04)
1988	2.9(0.4)	29.3(1.6)	47.3(1.5)	19.7(1.7)	0.8(0.2)	67.8(1.6)	20.5(1.7)		1.86(0.03)
1990	1.3(0.4)	33.0(1.7)	45.2(1.7)	19.5(1.1)	0.9(0.3)	65.7(1.9)	20.4(1.1)		1.86(0.03)
1992	1.3(0.4)	31.6(1.5)	52.4(1.3)	14.5(1.1)	0.2(0.1)	67.1(1.6)	14.7(1.1)		1.81(0.03)
Food on the Frontier	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.6(0.7)	13.6(1.5)	71.4(1.7)	12.8(1.3)	0.6(0.4)	84.8(1.6)	13.4(1.3)		1.97(0.03)
1988	1.5(0.4)	8.7(1.2)	75.7(1.6)	13.7(1.1)	0.5(0.2)	89.9(1.2)	14.2(1.2)		2.03(0.02)
1990	1.1(0.3)	17.3(1.3)	63.1(1.4)	17.8(1.1)	0.7(0.2)	81.6(1.3)	18.5(1.2)		2.00(0.02)
1992	1.2(0.3)	13.9(1.0)	68.0(1.3)	16.1(1.0)	0.7(0.2)	84.8(1.1)	16.8(1.1)		2.01(0.02)
Space Program	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	5.8(1.1)	14.6(1.8)	54.7(2.4)	23.6(1.8)	1.3(0.4)	79.6(2.2)	24.8(1.8)		2.00(0.04)
1988	3.2(0.5)	17.5(1.5)	51.5(2.0)	26.9(1.6)	1.0(0.3)	79.4(1.6)	27.9(1.6)		2.05(0.03)
1990	4.4(0.5)	13.6(1.0)	54.3(1.3)	26.5(1.3)	1.2(0.3)	81.9(1.0)	27.6(1.3)		2.06(0.02)
1992	3.1(0.5)	14.3(1.3)	55.7(1.7)	25.6(1.4)	1.3(0.3)	82.6(1.4)	26.9(1.4)		2.08(0.03)
Job Application	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.4(0.4)	14.4(1.7)	16.2(2.0)	65.4(2.1)	2.7(0.6)	84.3(1.6)	68.0(2.1)		2.54(0.03)
1988	1.3(0.4)	12.8(0.8)	17.5(1.4)	64.4(1.9)	4.1(0.9)	85.9(1.0)	68.4(1.7)		2.57(0.03)
1990	1.3(0.3)	14.4(1.1)	16.8(1.3)	66.6(1.2)	1.0(0.3)	84.3(1.2)	67.5(1.2)		2.52(0.02)
1992	0.3(0.2)	16.9(1.3)	11.4(0.9)	70.9(1.4)	0.6(0.2)	82.8(1.3)	71.5(1.4)		2.55(0.03)
Appleby House	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.6(0.5)	10.0(1.3)	35.8(2.0)	50.5(1.7)	2.1(0.7)	88.3(1.3)	52.6(1.9)		2.41(0.03)
1988	0.8(0.3)	8.9(1.1)	37.0(1.8)	52.0(2.1)	1.3(0.4)	90.3(1.2)	53.3(2.2)		2.44(0.03)
1990	0.8(0.3)	8.7(0.9)	40.1(1.7)	48.8(1.7)	1.6(0.4)	90.5(0.9)	50.4(1.7)		2.42(0.02)
1992	1.0(0.4)	9.5(1.0)	36.4(1.8)	50.9(2.1)	2.1(0.5)	89.4(1.0)	53.0(1.9)		2.44(0.03)
Bike Lane	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**		**Mean**
1984	1.7(0.5)	30.7(1.8)	42.7(2.7)	24.3(2.1)	0.6(0.3)	67.6(1.7)	24.9(2.1)		1.91(0.03)
1988	0.9(0.4)	29.7(2.1)	48.1(2.0)	21.0(1.5)	0.3(0.1)	69.4(2.1)	21.4(1.5)		1.90(0.03)
1990	1.1(0.3)	35.1(1.2)	43.7(1.2)	18.9(0.9)	1.3(0.4)	63.9(1.2)	20.2(1.0)		1.84(0.02)
1992	1.7(0.4)	33.7(1.4)	43.1(1.5)	19.8(1.3)	1.7(0.4)	64.6(1.4)	21.5(1.4)		1.86(0.02)
HOLISTIC									
Food on the Frontier	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	0.9(0.2)	2.7(0.3)	10.2(0.9)	28.5(1.0)	35.4(1.3)	17.3(0.9)	5.1(0.7)	57.7(1.5)	3.67(0.04)
1988	0.7(0.3)	2.3(0.5)	9.9(1.1)	32.1(1.8)	33.9(1.6)	16.1(1.5)	5.0(0.8)	55.0(1.9)	3.65(0.04)
1990	1.0(0.3)	1.5(0.3)	9.0(1.0)	31.3(1.3)	34.7(1.4)	16.9(1.1)	5.6(0.6)	57.2(1.4)	3.70(0.03)
1992	0.3(0.1)	1.6(0.3)	7.9(0.9)	26.3(1.6)	34.2(1.5)	21.1(1.3)	8.6(0.9)	63.9(2.1)	3.90(0.05)
Recreation Opportunity	**(0)**	**(1)**	**(2)**	**(3)**	**(4)**	**(2,3,4)**	**(3,4)**	**(4,5,6)**	**Mean**
1984	1.5(0.3)	1.8(0.3)	6.7(0.6)	27.8(1.3)	38.5(1.2)	18.1(1.0)	5.6(0.6)	62.1(1.4)	3.76(0.04)
1988	2.2(0.4)	1.7(0.7)	4.8(0.5)	26.1(1.7)	37.7(1.6)	20.2(1.5)	7.1(0.9)	65.0(1.7)	3.84(0.04)
1990	0.6(0.3)	2.2(0.5)	4.4(0.6)	26.0(1.4)	42.0(1.2)	18.8(1.1)	6.1(0.7)	66.9(1.7)	3.87(0.04)
1992	0.0(0.0)	1.9(0.5)	7.5(0.9)	26.9(1.3)	40.6(1.5)	16.7(1.0)	6.4(0.7)	63.7(1.9)	3.82(0.04)

The standard errors appear in parentheses.

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